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No. 9.

## THE TREATMENT OF HYPERTHYROIDISM BY MEANS OF RÖNTGEN RAYS.

By **Herschel Harris, M.B., Ch.M. (Sydney),**

*Honorary Member of the Röntgen Society of America; Honorary Consulting Radiographer, Sydney Hospital; Honorary Radiographer, Royal Prince Alfred Hospital, Camperdown; Honorary Radiographer, Royal Alexandra Hospital for Children, Sydney.*

Hyperthyroidism occurs more often than is generally recognized, and cases of a more or less mild nature are occasionally overlooked by the casual practitioner.

It is generally admitted that in recent years this condition has been on the increase practically all over Australia, and probably the strain occasioned by the war to a large extent accounts for it. New South Wales provides a very large number of cases, and while they occur generally distributed throughout the country, the city and suburbs supply quite a considerable number.

Queensland especially appears to contribute a large quota, and apparently the condition is fairly prevalent there.

### **Ætiology.**

It is generally admitted that the thyroid gland is the *fons et origo mali*, due to abnormal production of substances in it or to defective destruction of substances by it.

### **Thymus Gland.**

It has been found chiefly by post-mortem evidence that the thymus gland is frequently enlarged in cases of exophthalmic goitre, and the majority of fatalities following operation may be attributed to this condition.

Many observers state that the thymus gland is enlarged in from 60% to 90% of all cases of exophthalmic goitre.

### **Röntgen Ray Therapy.**

For many years Röntgen ray therapy has been employed in the treatment of the different forms of hyperthyroidism, but only of late years has it occupied a front position, and deservedly so too.

### **Theory of Röntgen Ray Therapy.**

It is a well-established fact that the highly specialized epithelial cells are the first to succumb to the action of the Röntgen rays, and the more embryonal in type are these cells the more easily are they destroyed.

Therefore, when we consider the pathological histogenesis of the thyroid and thymus glands in exophthalmic goitre, it can easily be recognized what a powerful agent we possess in its treatment. Experienced Röntgenologists from all parts of the world certify to the beneficial results produced by Röntgen ray therapy, properly applied.

### **Classification.**

G. W. Grier, M.D., of Pittsburgh, P.A., divides cases of hyperthyroidism into four groups, and this

grouping appears to the author as being very convenient and acceptable, viz.:—

- (1) Simple hyperthyroidism, or a persistent exaggeration of the physiological hyperthyroidism which occurs at adolescence, and is occasionally seen in adult life during the menstrual period and during pregnancy.
- (2) Acute exophthalmic goitre.
- (3) Chronic exophthalmic goitre.
- (4) Hyperthyroidism developing on an old goitre, either hypertrophic or cystic.

Medical and Röntgen ray treatment prove successful in most cases of Group (1).

In Group (2) Röntgen ray therapy is generally successful, and offers better prospects of permanent good than other methods. Surgical treatment is frequently successful in these cases, but a certain number of relapses occur, and in many such cases Röntgen ray therapy has been attended with good results.

In Group (3) Röntgen ray therapy is at times successful, and offers as much prospect of success as does operation. The treatment of this group of cases is naturally prolonged.

In Group (4) Röntgen ray therapy is not so successful, and surgery offers the best prospects.

Speaking generally, it is found that the cases that respond best to Röntgen ray therapy are the acute ones, while those of long standing do not respond so readily.

Under Röntgen ray therapy the first improvement noticed is in the nervousness and the pulse rate. The patient usually gains in weight very early, and the last symptoms to disappear are the enlargement of the gland and the exophthalmos.

Occasionally the enlarged gland only diminishes to a slight extent, and frequently the exophthalmos persists, in spite of the general condition being excellent. This is probably due to the deposit of fat in the orbit.

### **Technique.**

This is most important, and must be carried out very carefully. Filtered rays should be employed and a "cross-fire" method adopted.

It is found convenient to divide the thyroid into three areas and the thymus into two. A full filtered dose is then administered to each area.

In applying Röntgen rays one must be careful not to overdo it, as hypothyroidism might easily be produced as a consequence. Great care should therefore be exercised, and it is found safe in these cases to apply the rays at intervals of two weeks to start with and then gradually to extend the intervals. It is always safer to underdo treatment in these cases than to rush in and give large doses.

Each case must be considered on its merits and the dosage estimated accordingly. The pulse-rate should be carefully examined and the general condition estimated; the intervals of treatment can be judged accordingly.

It is advisable that all these cases should be under the observation of a medical practitioner whilst un-

dergoing Röntgen ray therapy, and it is always found that cases thus jointly treated provide most satisfactory results.

It must not be presumed that Röntgen ray therapy is advocated to take the place of surgery. But it must be remembered, and this is often not borne in mind by surgeons, that the thymus gland is much more frequently involved than is recognized, hence so often does it happen that operative interference is not successful.

When operation is adopted in these cases post-operative Röntgen ray therapy of the thymus gland should follow, as this area cannot be attacked by operation.

Many years ago the author reported cases of goitre treated by Röntgen rays, and frequently in those days it was employed as a pre-operative measure, to decrease the pulse-rate and strengthen the heart and generally to improve the condition of the patient before undergoing operation.

It has been pointed out also that when employed thus the subsequent operation is rendered somewhat more difficult, on account of adhesions, which are produced between the thyroid gland and the trachea. It was whilst visiting America that the author was most impressed with the treatment by Röntgen rays, and he wishes to call special attention to the excellent work performed by Professor George E. Pfahler, of Philadelphia, and also to express his gratitude for much instruction and information imparted during a demonstration of his cases.

During the past two and a half years just over fifty cases have been treated privately. Several have been operated upon by surgeons in this State and elsewhere, and the majority of the other cases have been referred by medical practitioners for treatment.

Of fifty-two cases treated, thirty-nine have been exophthalmic goitre, acute and subacute. With the exception of two, all the patients have been females.

The result of the treatment by Röntgen rays has been most successful.

Sometimes it is quite remarkable to see how rapidly the tremor disappears and the pulse-rate slows down. The general condition improves rapidly, the appetite grows and the patient gains in weight.

#### Conclusion.

In the treatment of hyperthyroidism Röntgen ray therapy plays a most important rôle.

In cases where surgery has been employed post-operative Röntgen rays should be applied to the thymus area. Deep therapy should be employed in a cross-fire method.

A filter composed of 1 mm. aluminium is employed by the author, and the intervals between treatment should be carefully adjusted and gradually lengthened as far as is compatible with the symptoms and condition of the patient.

It is always better to carry out this treatment in conjunction with a medical practitioner, as the dual control of the patient is much more satisfactory.

Naturally, some of these cases may recur, and will then need a further short course of treatment.

Therefore, "cures" should not be reported until a patient has remained well for at least ten years.

It must be remembered that hypothyroidism is apt to develop after an operation, and also that occasionally cases of hyperthyroidism change to cases of hypothyroidism, even when no particular treatment has been adopted.

The most that can be said is that Röntgen ray therapy in cases of hyperthyroidism offers more hope of successful treatment than any other method, provided it be carefully and conscientiously carried out.

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- G. W. Grier, M.D.—"The Treatment of Hyperthyroidism," *The American Journal of Röntgenology*, June, 1917.  
George E. Pfahler, M.D.—"The Treatment of Exophthalmic Goitre by Means of the Röntgen Rays," *The American Journal of Röntgenology*, February, 1916.  
Herschel Harris—"Notes on the Röntgen Rays and Radium," Presidential Address, *Proceedings of the Australasian Medical Congress*, Auckland, February, 1914.

#### AN IMPROVED OPERATION FOR LARGE HYDATID CYST OF THE LUNG.

By C. E. Corlette, M.D., Ch.M. (Syd.),  
Surgeon, Sydney Hospital.

W.R., aged 36, was admitted to the Sydney Hospital on February 2, 1918, complaining of pain in the left side of his chest, which had been troubling him more or less for seven weeks. It began suddenly, and was accompanied by slight cough, but no sputum. He stated that he had had "pleurisy" twice before, and with these attacks there had been some hæmoptysis, but there had been no hæmoptysis during his present attack. His appetite had not been good, but he looked well. His appendix had been removed five years previously at a country hospital, and he said he had been examined by X-rays at that time for hydatid, but with a negative result; quite probably the X-ray examination was defective, as it does not seem to have been carried out by an expert.

When the chest was examined there was found to be a very large area of dullness, accompanied by loss of vocal fremitus and vocal resonance, on the left side. Behind, it extended from the base of the lung up to the spine of the scapula, and in front it reached as high as the fourth rib. It therefore closely corresponded with the area of the lower lobe of the lung. There were a few fine crepitations over the margin of the line of dullness above the nipple. The right side of the chest showed exaggerated breathing, but was otherwise normal. There was no dyspnoea, and he seemed very well in his general condition.

A provisional diagnosis of hydatid was made, and this was confirmed by the report of an X-ray examination by Dr. J. G. Edwards.

I operated on this patient on February 6, 1918. Ether was administered, and he was then placed in the semi-prone position at the edge of the table, with the left (i.e., the diseased) side lowermost and the right arm extended, with the elbow bent, the head being pillowed on the forearm. Sitting in a chair, I cut down over the most prominent part of the thorax, over the cyst. A large, transverse incision was made, but the *latissimus dorsi* was not cut in the direction of the skin wound, but separated in the direction of its fibres. Having cleared a convenient area over the ribs, I resected about 10 cm. of two ribs, including periosteum, and exposed the pleura. It could be seen that parietal and visceral pleura were in apposition and that adhesions existed. Care was taken to examine for anything that might represent an interposed diaphragm beneath the pleura, but it seemed plain that it was not a pushed-up liver hydatid, but a true cyst of the lung. Incision through the pleura exposed immediately beneath it the adventitious capsule of the hydatid, which was anchored by a couple of stay sutures and then freely incised. It proved to be an enormous simple cyst, i.e., a single parent-cyst, without daughter-cysts, this being, of course, the type always met with in hydatids of the lung that come to operation, while cysts of the liver usually contain daughter-cysts. Fortunately, the adventitious capsule no-



where gave way, so the patient was preserved from the two great risks of these operations, drowning by escape of hydatid fluid into the bronchi and fatal hemorrhage. The parasitic cyst was evacuated easily through the large incision. The fluid, probably amounting to several quarts, was drained out, and then the cavity mopped out till it seemed dry. Here followed the technique which formed the principal feature of the treatment of this case. I stitched up the gaping opening through pleura and capsule with catgut, and then completely closed the wound, without employing any drainage tube.

The subsequent history was as follows: On the day following operation there was a small hæmoptysis amounting to something like 50 c.c., and there was some subcutaneous emphysema on the left side of the chest. His general condition was very good. Pulse, respiration and temperature remained normal. The wound healed by first intention, and without any discomfort. He was discharged from the hospital sixteen days after operation, apparently quite well. At the time of his leaving the hospital faint vesicular breathing could be heard over the greater part of the area formerly silent; the extreme base, however, was still silent. There were no crepitations or other adventitious sounds. The dullness had disappeared. X-ray examination showed that a cavity still existed, but of relatively small size, and at the bottom of it a small lake of fluid could be recognized. This could be made to oscillate with changes in position of the patient, the surface of it remaining level, whatever the inclination of the body. However, the fluid was quite small in amount. The patient came up for examination every fortnight until June 4, when it was quite satisfactorily evident that nothing now remained but some apparent thickening of the pleura. There had been no regeneration of rib, and the site of the incision was indrawn. Dr. Hamilton Marshall very kindly made at this time a very careful examination of the chest, and he reported that the lung had expanded down to the level of the incision. There were some slight signs of emphysema, but very good breathing. The patient himself reported that he had never had the slightest discomfort or inconvenience, and had felt perfectly well throughout. I showed this case at a clinical meeting of the New South Wales Branch of the British Medical Association, held at the Sydney Hospital on July 12, 1918.

#### A Discussion of the Technique.

**Posture.**—The semi-prone position, with the side to be opened at the edge of the table and downwards, while the sound side is upwards, is not described in the text-books. I devised it for use in hydatid of the lung and in empyemata. I have tested it well during the past three years, having used it in thoracotomies for both conditions, and also, in one case, for transpleural attack on a suppurating hydatid of the liver. It seems to me to present certain advantages. No, that is too moderate a way of putting it. It is incomparably superior to the position generally adopted, in which the patient lies in the reverse position, with the diseased side raised and the sound side lower and pressed against the top of the operating-table. The sole advantage of the common method is that it is easy for the anaesthetist and for the operator, however dangerous to the patient. But, provided that the operator is seated, the position I use is extremely convenient for operations on the lower part of the thorax—those most frequently required. And while it offers admirable facilities to the operator, it leaves the sound side free and unencumbered. And, obviously, the diseased side is so placed that the best and quickest drainage is provided as soon as the cavity is opened. In the case of hydatid, where drowning is a real peril, the position adopted manifestly diminishes the risk of flooding the bronchial system of the sound lung, and the risk of drowning is reduced to a minimum, while, at the same time, the influence of gravity and the

downward and outward rush of water brings the parasitic cyst-wall out into the wound and greatly facilitates its extraction.

It is perhaps almost unnecessary to add the warning that in operations of this kind the surgeon should always be provided with a waterproof bib and apron beneath his operating gown.

**The Incision.**—As regards the method of entry into the thorax, an incision not quite along the line of a rib, but approximately transverse, is suitable for cases in which portions of more than one rib are likely to require removal, as in such a very large hydatid as that just described. Further, the method I have followed, of splitting the *latissimus dorsi* in the direction of its fibres, instead of cutting it across, lends itself particularly well to a thoracotomy designed to be followed by immediate closure by layered suture, pleura to pleura, muscle to muscle, and skin to skin. It contrives a sounder and more self-closing restoration of the parietal coverings. The amount and kind of rib-removal will vary according to the requirements of each case, but when a large hydatid has to be dealt with the removal of a good length of two ribs, with periosteum complete, makes it more possible for the huge cavity to close, since it permits the chest wall to be indrawn in proportion to the amount of rib removed. It should be borne in mind that when there is a hydatid of any considerable size present, it is practically certain that a large portion of the lung has become permanently atrophied.

**The Treatment of the Sac.**—But the most satisfactory and distinctive part of the operation I have described is the treatment of the sac after evacuation, not by insertion of a drainage tube, as has been the usual practice, but by immediate closure. Shortly before the patient had come into my care I had had the advantage of reading the most interesting paper by G. E. Gask and K. D. Wilkinson in the *British Medical Journal* of December 15, 1917 (Vol. II., 1917, p. 781), entitled "Penetrating Gun-Shot Wounds of the Chest and Their Treatment" as it had been developed in France. Other papers on the same subject appeared in later issues of the *Journal*, but these numbers had not at that time reached Australia. The problem before me was one of very great seriousness for the patient. No one could be very keen on accepting the responsibility for doing him, and it was understood that he was a "pass on," having been turned down on account of the risk. But it could not be doubted that he would eventually, and probably soon, be killed by the hydatid if he did not die as a result of operation. If immediate death did not occur, and the standard practice of leaving in a drainage tube were followed, we would bring about a condition resembling that following the opening of a large empyema, but worse, since the lung would not merely be one recently collapsed, but in part actually destroyed by atrophy, for the condition had certainly existed for years. At his age (36) we might, at best, expect to find the closure of such a cavity, under those circumstances, a long, difficult and wearing process, lasting many months, and perhaps necessitating further very perilous plastic operations before it would close at all. Quite possibly it would never close. But, on the other hand, every man who has had much experience of hydatid disease, can recall cases of com-

plete recovery after a patient had coughed up a hydatid of the lung, though usually only after a severe and protracted illness. Further, in this case there had not yet been any rupture of the cyst or of its containing sac, no open communication with a bronchus, and no secondary infection of the cavity, no chronic thickening of the surrounding parts produced by efforts to wall off secondary infection, and no appreciable pneumonic consolidation. On the contrary, we had the advantage of a simple aseptic cavity containing the living parasite. Moreover, the adventitious capsule surrounding the cyst would, in its present condition, as we know from past experience, be thin and delicate, offering a minimum of obstruction to expansion of the lung, on condition that no suppuration occurred. If the sac were treated by any form of drainage, suppuration would be inevitable, and this would thicken the wall of the cavity and bind the lung, offering serious obstruction to the desired expansion. But if I closed the cavity, and it afterwards became infected, there would be no great difficulty in recognizing what was happening, and it would be quite easy to re-open it. If, then, the chest had to be re-opened, the patient would be no worse off than if I had drained immediately. So I decided on evacuation, with immediate closure. As the case-report shows, the decision was justified, with the happiest results for all concerned.

I might have added to the case report that in this case immediate closure of the wound produced the same protection against respiratory distress that has been remarked in the reports of thoracic surgery in France when immediate closure of penetrating wounds has been carried out.

In regard to the technique, I can certainly claim that the method of operation I have described is quite original, so far as I am concerned. But I have been looking through the literature, and I find that it is not in every respect new. I cannot claim the credit of priority for the adoption of immediate closure of the thoracic wound after evacuation of a pulmonary hydatid. I have merely the credit of independent invention. But it appears that it is really quite a new development to apply the idea to the special case of a very large hydatid involving the risks and difficulties that I have already discussed, and in the full expectation of leaving a cavern that could only shrink very gradually.

The first recorded case of immediate closure after removal of a hydatid of the lung is certainly that of Jeffreys Wood,<sup>1</sup> of Melbourne. His operation, performed as long ago as 1895, and recorded in 1898, was upon a girl, aged 10 years, from whose lung he evacuated a hydatid containing 450 c.cm. of fluid. He closed the wound, and the patient did very well, leaving the hospital in about a fortnight. Dr. Wood, in commenting on the case, mentions the tendency of the bronchi to open through the adventitious capsule into the cavity, and he allows that there is great risk of consequent infection. He sums up, very cautiously, by saying that "in cases where the bronchial tubes on the wall are very small, or absent, I think time may be saved, without risk to the patient, by immediate closure of the wound." But, for myself, I do not admit that the opening of bronchi into the sac

ought to be regarded as so great a danger as Dr. Wood at that time feared it to be, or as one of my critics at the meeting when I showed my patient, was also rather inclined to fear. Opened bronchi undoubtedly existed as a complication present in my own case, as the subsequent development of a surgical emphysema showed. But how often do we find the opening of bronchi by laceration produced under aseptic conditions, as in many cases of fractured rib, followed by suppurative broncho-pneumonia or empyema? I think we can draw great encouragement by our experience of the generally favourable course of such accidents.

In 1911 appeared a most interesting paper on "Hydatid Disease of the Lung," by Fred. D. Bird,<sup>2</sup> of Melbourne. I find that there he advocates immediate closure of the wound "if the lung expands quickly and obliterates the space previously occupied by the hydatid," and this, he says, it usually does. But he makes a specific exception to the kind of hydatid which formed the problem which I had to solve, for his dictum is that, "should a cavity still remain, or should the adventitia be thick, a drain tube is placed in the cavity." Now this is precisely the pivotal difficulty of a large-sized hydatid like that of my case, and the principal point of the treatment, as I have conceived it, the point on which success chiefly depends, is the omission of this drain. What I have recorded shows that an old-standing and giant-sized hydatid of the lung—I have never met with another as large—can be conquered with a rapidity and with a comfort and security to the patient that astonishes one whose experience has hitherto been confined to classical lines, to open drainage.

I think it will be admitted that, though we have here but the record of a first experiment with such a case, it is a most encouraging one, and contains great promise of future usefulness. It certainly justifies further trial.

#### References.

- <sup>1</sup> A. Jeffreys Wood—"Three Cases of Pulmonary Hydatid," *Intercolonial Medical Journal of Australasia*, 1898, Vol. 3, p. 475.
- <sup>2</sup> Fred. D. Bird—"Remarks Upon Hydatid Disease of the Lung," *Australian Medical Journal*, 1911, Vol. XVI., p. 55.

#### REMARKS ON DR. HONE'S ARTICLE ON A NATIONAL MEDICAL SERVICE.<sup>1</sup>

By J. Corbin, M.R.C.S., L.R.C.P.,  
Adelaide.

I feel very strongly on the subject of some form of nationalization of medical service.

One cannot have seen the large number of men of different nations that I have seen during recent years without having been enormously struck by the disparity existing between men who have lived under different conditions of life.

The physical disparity between Australian troops and the British troops is extremely striking.

Of course, the large part is due to ways of life, feeding, housing and working conditions being widely different; but over and above this one saw obvious results of illness and disease that should not have

<sup>1</sup> Read at a Meeting of the South Australian Branch of the British Medical Association on November 7, 1918.

been allowed to remain untreated in early years and that would not have remained so under a well-conceived and well-administered national health service.

I have always been struck by the health of lodge members. During ten years of lodge practice I was impressed by the small percentage of serious illness that I was called upon to treat among lodge members. I do not know whether this was the general experience of lodge surgeons, but it certainly was mine.

I had infinitely more minor ailments to treat in lodge patients than in private patients, but I feel convinced an infinitely less percentage of serious illnesses.

I ascribe some of this to the fact that the lodge patient consults his medical attendant before he is gravely ill. The private patient either consults no one or takes some quack medicine or a prescription from a chemist and it is not until he is seriously ill that he seeks medical advice. In many cases the result is a grave illness, or even a fatal issue.

This does not apply to the really well-to-do, but to the intermediate class, to whom economy is essential, and this class forms the largest part of any community, and is the class which is most likely to be benefited by a scheme of national insurance. The very poor and destitute are well provided for; the very rich can pay for any skill or advice; it is the intermediate class that is always sure to suffer.

I realize that the difficulties of evolving a scheme of nationalization of medical services are tremendous, if it is to fulfil its obligations to the profession and the public; but for this very reason I think it will be calamitous if the profession turns its face against the principle and places itself in opposition to any and every scheme.

The idea of nationalization is in the minds of all political parties, and has a large measure of support in the public mind, and it is, in my opinion, certain that it will be introduced in part or in whole at some not very distant date.

If the medical profession oppose it, it will, after various vicissitudes, be eventually introduced, despite their efforts. I have no confidence in the whole profession opposing it the whole of the time; we have had experience of the difficulty, I might say impossibility, of getting an absolutely united profession.

The result will be a breaking-away at some point of the more needy and possibly the least excellent of the profession and a nationalized service will be imposed that is satisfactory neither to the profession nor the public.

On the other hand, if it be possible to devise an equitable scheme for the public and profession by the profession lending its efforts towards this end, and if the Government be persuaded of the necessity for obtaining help from the profession in formulating the scheme, a system may eventuate which, though possibly not ideal, will have advanced some day towards this, and will leave open the way for further modification and alteration in the future.

Without entering into any detailed discussion of plans or details, as the whole scheme is too big and fraught with such difficulties that it will need the whole time, thought and work of the best brains and

abilities to cope with it, I would like to touch on some of the points.

Opponents of the idea state that it will lead to deterioration in the class of medical men, and that their work will deteriorate.

I think this has been allowed to bulk too largely. The standard of education will remain the same and the brain-power of graduates of medical courses will be the same. Why should the man after going into practice deteriorate because he is paid a fixed income, instead of having to earn a fluctuating amount?

We know at present that there are medical men who have but the barest amount of knowledge to enable them to qualify and who depend to a great extent in practice on "their bedside manner" or "commercial instincts" for a large part of their success in practice. These men may deteriorate in their ways and their work also, but the man who is keen on his profession and likes to find out what is wrong with the patient and to set it right, will still do it to the best of his ability. I venture to think that even under a nationalized service the large percentage of medical men will still do the best they can from the driving force of the spirit that is in them.

I do not for one moment under-rate the difficulties, and do not intend to discuss them. Most of them are all too obvious, and many will become apparent under the best-thought-out scheme, but I maintain that they should be overcome.

I think the profession should think long and well before flatly opposing all attempts to introduce a measure, and I hope they will endeavour to guide the politicians to a wise decision.

The medical services of the British army at present, which is dealing with the health and welfare of many millions of soldiers and workers, is an object-lesson of what a high degree of efficiency can be obtained under a central administration willing to be guided in all things appertaining to the health and welfare of the troops by specialists in every branch of medical knowledge.

We have there the hundreds of regimental medical officers and ambulance medical officers, the casualty clearing stations, base hospitals with their graded staffs of medical officers, physicians and surgeons, and throughout the back areas the innumerable specialized centres for the treatment of special affections by the best experts available in every separate branch. All these units have attached or available still further specialized branches of pathology, bacteriology, biochemistry, electrical experts in investigation and treatment. Indeed, the full possibilities of the scientific medical world is made available for the treatment of every individual in the whole army, regardless of social rank, army rank or financial status. And each and every item in this great service is by means of an excellent administration made available for the sick and wounded at the earliest possible moment.

Take a battalion in the line, with, say, one thousand men. They are under the care of the regimental medical officer; should they feel sick or be wounded it is their duty and their privilege to receive his attention immediately. He decides whether it is a minor ail-



ment, needing no other treatment than he has available. If it does need further treatment the man is removed to an ambulance, thence, if the ambulance medical officer considers necessary, to a casualty clearing station. Here there are men with more leisure, and perhaps some with more special knowledge, who examine the sick or wounded man and either treat him or recommend removal to a base hospital or special centre devised for the treatment of such cases.

Thus it is seen that, with the least possible delay, the sick or wounded man is rapidly passed, as it were, through a series of medical filters, until he arrives at the place where he can be treated with the greatest efficiency by the best expert necessary for his particular infirmity. By these means he is ensured of the greatest degree of safety and the army is ensured the return of an effective, if such be possible, at the earliest moment.

There is, in addition to all these units and their staffs, a permanent band of consultants to the army itself at general headquarters and in each individual army. By their efforts any advance in any individual method of treatment is investigated, and, if satisfactory, is introduced immediately into all other units, and by their supervision and energy the scientific side of the whole of the medical services is co-ordinated and the results obtained by the best men brought before the notice of all the medical service.

Under this system the originality and work of every medical officer is encouraged to the full and, if a very junior officer manifests particular knowledge and skill in a particular branch, he is sure of being placed in a position where his abilities may have full scope, and he is sure of recognition for his brains and work. There is therefore a constant spur to the ambition and the scientific energy of the individual.

I can conceive of a medical national service that would conform to this pattern, with alterations to fall into line with the differences between army and civil life, though I confess the scheme seems somewhat Utopian, and we, as a profession, and the public as well must come to it by a slow process of evolution.

The general practitioner would represent the regimental officer; resident permanent medical officers at hospitals of varying size represent medical officers at the ambulances and casualty clearing stations. Main general hospitals would represent the base hospitals, which would have their laboratories for the investigation of disease, preventive medicine, examinations, etc., and, of course, all the special departments we are accustomed to. The absolute specialized experts might be the visiting specialists, who should also be whole-time men, and available at places and times as necessary.

Rates of payment might be made commensurate with the degree of scientific equipment and the branches needing higher equipment mentally and more study and examination to qualify for them, should receive a higher rate of pay. Thus there would be a service available into which graduates could go immediately after being equipped for practice, and after a year or two the individual would find for himself what branch of the medical work appealed to him most and bend his energies to qualify for a post in this, the inducements to him to raise himself from

routine work being higher pay and work more congenial.

There are, I am sure, a great many men who have often desired to specialize in some branch of medical service, in which field it is possible they might have achieved results of great value to the community at large, who have been prevented from doing so by reason of family and financial embarrassment, and who have not dared to forego the certainty of a living earned by arduous general practice.

I feel sure that, ultimately, the public and profession will arrive at a conclusion that the national health, being the greatest national asset, it is imperative that every individual should have, as a right, the attention and skill of the best medical men in every branch of medicine and surgery.

Feeling, as I have said before, that the difficulties, both with regard to the profession and the public, are so great, I agree with Dr. Hone that a commencement could well be made along the lines indicated by him in the matter of a Ministry of Health, research, preventive medicine, etc., which are in some measure under control at present, leaving the greater and more difficult question of personal attendance for the immediate present.

I do not see why there should not be from the beginning a private medical service, continuing at the same time to cater for those medical men who do not care to join the service and also to cater for the portion of the public who may prefer to be treated by an individual whom they personally pay.

It is imperative, when the time seems ripe for some such scheme, that the Government be made to realize that rates of pay in the higher branches must be made sufficient to attract the best brains of the medical community.

### Reports of Cases.

#### TWO CASES OF LACERATED VAGINA DURING COITUS.

By Constance E. D'Arcy, M.B., Ch.M. (Syd.),  
Honorary Assistant Surgeon, Royal Hospital for Women,  
Sydney.

The case of trauma of the vagina caused by coitus reported by Dr. E. H. Stokes in the *Journal* of February 8 recalls two cases that have occurred in my practice, which are of interest.

*Case I.*—The patient was a married woman, about 40 years of age, who had borne four children, the last one being two years of age. Her menstruation had been regular and her general health good. She awoke out of sleep after midnight feeling terribly ill and as if she were about to die. She became conscious of lying in a bed soaked in blood, and, on investigation, she found the bleeding coming freely from the vagina. A doctor was sent for, and, after rapid examination, he decided she was suffering from an incomplete miscarriage, and accordingly packed the vagina and sent her into hospital. On arrival at hospital she was found to be greatly collapsed, the skin was blanched, the pulse very soft and running. Saline solution was administered, and as there was no sign of bleeding, the vaginal packing was not interfered with. Some hours later, when her condition had improved, the packing was removed and examination revealed a small, firm uterus, with a small, hard cervix and well contracted os. It was evident that the uterus had not recently been pregnant. In the left lateral fornix there was an irregularly rounded, jagged laceration, about 3.75 cm. in diameter, through which protruded soft tissue resembling to the touch placental tissue. As there was only slight oozing now, the vagina was again packed. The surface granulated satisfactorily.



torily. When the patient was questioned she said there had been violent, painful coitus, but she had not been conscious of anything giving way. There had been no manual, mechanical or other interference with the vagina other than coitus. Her vagina was slightly shorter than normal, due to the fact that she had suffered somewhat extensive laceration of the perineum at child-birth, which had not been repaired. I suggested that she should have the perineum restored by plastic operation, when her anaemia had improved, so as to prevent a recurrence of the accident.

*Case II.*—This patient was a young married woman, who had been confined for the first time six weeks previously at a maternity hospital. The history of the confinement was that it was normal, and there had been no mechanical assistance. There were no lacerations of the perineum or genital tract, and the puerperium was normal. The lochia ceased a fortnight after confinement, and there had been no bleeding since, until the night before admission to hospital, when bleeding commenced after painful coitus. In this case, too, there had been no manual or mechanical interference with the vagina. As the bleeding continued a doctor was sent for, and he diagnosed the case as sub-involution of the uterus with hæmorrhage due to retained secundines, and suggested curettage. On examination the uterus was found to be well involuted, and with the speculum it was seen that there was no blood issuing from the os, but there was a linear tear of the vaginal mucosa in the posterior fornix, stretching from one lateral fornix to the other. Through this laceration there projected soft, spongy, dark red tissue, and from three points there was free venous oozing. Through this soft, spongy tissue the bulging, glistening peritoneum was seen moving with respiration, but its continuity was not broken. The laceration was sutured with catgut, and so the bleeding arrested. The line of suture was about 5 cm. in length. The tissues felt soft while suturing, but probably no softer than in any other woman six weeks after confinement. Beyond this possible variation of the normal there was absolutely no abnormality in this woman's pelvis and the perineum was intact and strong.

## Reviews.

### SHELL CONCUSSION AND SHELL SHOCK.

In the years 1914 and 1915 most neurologists inclined to regard shell-shock as a pure neurosis or psychosis with which a certain degree of exaggeration or simulation might be intermingled. Then, influenced by the writings of Ravaut, Guillaumin, Léri and others, they began to see that, at any rate in a certain number of cases, there might be an organic factor. Further observation has confirmed this view, so that at the present time they recognize, on the one hand, the various neuroses of a purely hysterical nature, ably described by numerous writers, and, on the other hand, certain conditions—it would be wrong to call them neuroses—in which skilled and careful examination point to the existence of an organic lesion. It is these organic conditions, these definite concussion-effects and the consequent mental states which Léri sets out to distinguish from the purely hysterical manifestations. He maintains, indeed proves, that the *commotioné* and the *émotioné* at all periods of their suffering, but particularly in the early stages, are two entirely different subjects; from their respective symptoms alone it is almost possible to declare the nature of the original disabling factor.

In differentiating these conditions Léri has had the advantage of observation in all fields, namely, on the battlefield, where concussion effects are seen in their pure state, in casualty clearing stations and in base hospitals, where emotional disturbances may be observed in their purest growth. It is by reason of this width of experience that his observations and the conclusions he draws therefrom differ from those of others. And it is thus that he brings us to see clearly the ways in which the complete physical and mental inertia, the total amnesia, the mydriasis and bradycardia of the sufferer from true "shell-shock" (*le commotioné vrai*) differ from the very much commoner pseudo-inertia,

pseudo-confusion and pseudo-amnesia of the patient with purely functional disturbance.

This is the main object of his book, but he adds useful chapters on the mental disorders and hysterical troubles consequent upon the concussions and mental shocks incidental to war, on the organic lesions of concussion and on treatment, all of which are interesting and help in proving the writer to be sincere and impartial, and one who has drawn upon a vast accumulation of personal observations.

A preface is contributed by Professor Marie.

### WAR NEUROSES.

Dr. MacCurdy is the Lecturer on Psychology in Cornell University, and in 1917 went to England to enquire into the neuroses of war, in order that American medical officers might profit by his experience. The result is a clearly-written, thoughtful and useful little book.<sup>2</sup>

The classification adopted is perhaps narrower than that in previous use. Practically he divides his cases into two groups: "anxiety states" and "conversion hysterias." In the first group, anxiety is the most prominent and consistent clinical feature, and such cases bear most resemblance to what is termed "neurasthenia" in civil practice. In the second group an alteration or dissociation of consciousness regarding some physical function, such as speech, hearing or movement, dominates the case. In so grouping his cases, Dr. MacCurdy brings out the important part taken by mental factors in the production of these neuroses, and he endeavours to show that mental factors completely over-ride fatigue, shell explosions and other distressing occurrences of a physical nature, which are to be regarded as merely the spring releasing the accumulated morbid mental forces. In the main this cannot be gainsaid, but it overlooks the clinical syndrome of true cerebral concussion or contusion described by French writers.

In elaborating his thesis, and in his case histories, which are numerous and well-taken, he draws attention to the interesting fact that officers are specially prone to "anxiety states," while most of the cases of "conversion hysteria" fall among privates. The explanation given for this remarkable difference in reaction is novel, and hinges on the differences of education, responsibility and outlook between the two—one is a leader, the other a follower. Again, there is originality in the observation that the sufferer from an "anxiety state," prior to the final collapse, has wished for death, while the sufferer from "conversion hysteria" has desired disablement.

The writer makes judicious comparisons between civil and war neuroses, and is struck by the fact that the latter depend essentially on the simple instinct of self-preservation, the sexual and other factors of civil disorders being in abeyance. And this simplicity of origin, in the case of the war neurosis, facilitates treatment, which must be purely psychological, while adapted to the military necessities which consider all men alike.

### PNEUMONIC INFLUENZA.

In the *New South Wales Government Gazette* of February 15, 1919, His Excellency the Governor issued a proclamation, modifying a previous proclamation concerning the holding of religious services. According to the new order, outdoor services are permitted, provided that all persons present, except the officiating clergyman, wear masks, that the persons are spaced not less than three feet apart, that the meeting does not occupy more than thirty minutes, and that the unmasked clergyman or preacher is not less than six feet away from the nearest member of the congregation.

On the same day a further proclamation, modifying the order concerning the wearing of masks within the County of Cumberland, was also published. According to this order, the obligation to wear masks is removed in the case of persons present in any

<sup>1</sup> *Commotions et Emotions de Guerre*, par André Léri; Préface du Professeur Pierre Marie (Collection Horizon: Précis de Médecine et de Chirurgie de Guerre); 1918. Paris: Masson et Cie; Demy 8vo., pp. 196, illust. 2. Price, 4 francs.

<sup>2</sup> *War Neuroses*, by John J. MacCurdy, M.D., with a Preface by W. H. R. Rivers, M.D.; 1918. Cambridge: The University Press; Demy 8vo., pp. 132.

public park, public baths or beaches, provided that the unmasked persons are not congregated together in parties of more than three, unless such parties consist of members of one family, in the case of persons in unfrequented roads where a distance of at least six feet is maintained between individuals, in the case of persons repairing roads, telephones, electric wires or posts, or engaged in any laborious occupation, provided that they are at least six feet from one another, in the case of persons in boats or ships upon the water, except ferry boats, in the case of persons on horseback or riding alone in a conveyance, in the case of persons actually engaged in playing a game in the open air, and in the case of persons performing on any musical instrument in the open air as members of a band.

In a third proclamation issued on the same day, His Excellency the Governor announced that the Government had taken possession of all ambulance vehicles within the City of Sydney, and required the owners of these vehicles to hold the same at the disposal of the Government, to be used in the manner directed by the State Attorney-General.

On the same day a further proclamation was issued, modifying the mask regulations in so far as the municipal district of Albion is concerned, in accordance with the modified regulations dealing with the County of Cumberland.

On February 19, 1919, His Excellency the Governor of New South Wales issued two further proclamations, the first prohibiting the holding of any agricultural, horticultural or any other show or exhibition within the State of New South Wales. By the second proclamation His Excellency ordered that Sunday, February 23, 1919, should be observed as a day on which "all persons may unite in humiliation and prayer to Almighty God through His Divine Mercy to avert this dire calamity."

In the *Victorian Government Gazette* of February 12, 1919, the following additional regulations under the *Health Act, 1915*, have been published:—

1. This Regulation may be cited as the "Influenza Emergency Regulations 1919 (No. 2)" and shall be read and construed as one with the "Influenza Emergency Regulations 1919."

2. Every bar on any registered club or in any licensed victualler's premises within a distance of fifteen miles from the Post Office, at the corner of Elizabeth Street and Bourke Street, Melbourne, and the premises of the holder of every Australian wine licence within such area shall until permission to re-open is given by notice in the *Government Gazette* be forthwith closed and kept closed during the whole twenty-four hours of each and every day notwithstanding anything in the Licensing Act or in any licence thereunder contained.

3. No licensed victualler or holder of an Australian wine licence within the area aforesaid (hereinafter referred to as the "Licensee") shall permit any person not being the hired servant of such licensee to resort to the bar or other accustomed place of sale of liquor for any purpose whatsoever.

4. No licensee shall supply or permit to be supplied on or from his licensed premises to any would-be customer any spirituous or fermented liquors to be drunk on or off such premises: Provided that nothing in this clause contained shall prevent any such licensee taking orders either in writing or by telephone for the delivery in bottles of liquor at some place not less than half a mile distant from such premises by himself or his agent, and any such delivery in accordance with such order shall be lawful.

5. Every licensed person who under the last preceding clause sells liquor in bottles for consumption of liquor beyond his licensed premises shall keep a register of all such sales, with the name and address of the person obtaining the liquor, with particulars of the liquor dealt in, which register shall be at all times available for inspection to any member of the police force or any health inspector.

6. Nothing hereinbefore contained shall be construed as forbidding the licensee of premises when it has been heretofore the practice to habitually supply *bonâ fide* meals to sell dispose of or supply liquor to a lodger or boarder for consumption with a *bonâ fide* meal there

partaken of by such lodger or boarder between noon and 2 p.m. or between 6 p.m. and 8 p.m. "Boarder" in this clause shall include a person resorting to the premises in good faith for a meal on a single occasion.

7. In the area aforesaid persons not being intending lodgers or not being members of the household are forbidden to visit or resort to licensed victuallers' premises or the premises of the holder of an Australian wine licence not being *bonâ fide* lodgers or not moved in good faith to resort thereto for a meal the same being a place where meals have heretofore been accustomed to be supplied.

#### THE SALE OF COCAINE.

The revelations in the recent scandalous case of the death of an actress in London from an overdose of cocaine exemplifies the extreme difficulty experienced in limiting the traffic in narcotic drugs. It is an unfortunate experience that the strictest laws and the most vigilant control are unsuccessful in their object of restricting the sale of these drugs to their legitimate medical purposes. From time to time it leaks out that unauthorized persons secure a supply of opium, cocaine, *cannabis indica* and other narcotic drugs, and it is not unnatural to suppose that many instances are never brought to light at all. One of these disclosures was made at the Collingwood Court on February 19, 1919. It appears that a constable disguised as a returned soldier entered a shop of a pharmaceutical chemist, and asked the assistant in charge, Harold Bickford Harris, for "a dollar's worth of 2.2's snow." He was supplied with a packet of cocaine. Five days later he obtained another packet in the same way. The constable called a week later, but Harris on this occasion told him that, in view of the reports in the press concerning the traffic in drugs to soldiers, he did not dare to sell him any more. The packet delivered to the constable was found to contain 0.27 gm. of cocaine hydrochloride. Harris was fined £20, with £14s. 6d. costs. In his evidence the Government Analyst dealt with the lethal dose of cocaine. A similar case was dealt with in Melbourne on February 21, 1919. This matter is of importance from a toxicological point of view, but of far greater importance to the community is the fact that the habitual taking of cocaine induces a moral deterioration of the individual, and has the most depraving result on conduct and character.

#### BADGES FOR FEMALE RELATIVES OF MEMBERS ON ACTIVE MILITARY SERVICE.

In July, 1918, we published a note concerning the announcement by the Department of Defence that badges would be issued to the nearest female relative of members of the Australian Imperial Force and of the Naval and Military Expeditionary Force, and that these badges would be regarded as an indication that the member had left Australia since August 4, 1914, for active service abroad. It was then stated that bars would be attached to the badges issued to mothers who had more than one son on service or returned from active service abroad.

The military order dealing with the issue of special badges to the mothers and widows of deceased members of the Australian Imperial Force and of the Naval and Military Expeditionary Force have just been republished for general information. These badges will be issued to the mother and also to the widow of a member of either force who has been killed in action, died of wounds, or of other causes while serving, or who has died after discharge from causes directly attributable to wounds or sickness incurred on service. Only one badge will be issued to any one person. One star attached to the badge indicates that the owner is the widow or the mother of a deceased member, while two or more stars indicate that the owner is the mother of two or more deceased members. Two stars may also indicate that the owner is the widow of one deceased member and the mother of another. The badge is to be worn attached to the dress on the right breast. The badges will be supplied on application to the Headquarters of the Military District in which the deceased members enlisted.

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### Proportion.

The professional photographer is ever careful not to allow his subject to protrude a hand or foot, lest these members appear in the picture much larger than in nature. Whenever a magnifying glass is held to an object at close range, the object appears to us to possess a size and significance out of all proportion to other, less near objects. At the present time we are examining an infective process which is close at hand, and are allowing our magnifying glasses to create a picture so overwhelmingly gross and encompassing as to blot out more important matters, such as the proper treatment of injured soldiers, the task of repatriation, the control of venereal disease, the campaign against tuberculosis, the detection of mental deficiency and scores, perchance hundreds, of other national problems. The epidemic of influenza in the greater part of the world has been extremely serious, and has resulted in the loss of a large number of lives. It is a short-lived danger and, unlike an epidemic of plague or cholera, it has no permanent incapacitating effect on a nation. It is essential that every means should be adopted to stem its spread, or to hold it back from breaking out in districts or countries hitherto unscathed by its damaging effects. It becomes necessary when it assumes menacing proportions to modify the usual routine of life, in order that an adequate service may be available for those who are stricken. But until necessity forces our hands, it is both unwise and harmful to scare the populace, to cripple industries and to upset the whole social machine. This inevitably leads to a neglect of duties, and many national movements suffer irreparably by an interruption of efforts. Our armies have revealed a capacity of facing danger and death without ceasing to strive toward the end. The advent of epidemic disease was not allowed to interfere with the military activity of the troops, save in those instances when an infective process robbed the

responsible military authorities of the necessary number of effectives. Even in the case of Gallipoli the military position might have been quite different had the medical authorities made better provision for adequate and expert bacteriological work on the field. It would then have been possible for our men to have gained their objectives in triumph, without any need to break off on account of an undue proportion of infections among the troops. The daily press to-day in the Commonwealth is fanning the flame of panic until the community sees things out of all real proportion and until the social machine stops under the influence of fear. Nothing is more likely to engender disaster than panic, and nothing is more likely to create a permanent effect on a community than a social disruption. A little thought must compel the most fearful individual to realize that the increase of the ordinary, daily risk he runs in his occupation or pleasures to let us say twice that risk is by no means incompatible with the calm continuance of his duties to those dependent on him, to his fellow-citizens and to himself. And a little further thought must convince him that the present outbreak has not produced anything approaching a doubling of the ordinary death-rate in any of the effected countries during the year 1918. The absence of fear and of scare is the most important general means to combat a general infection. It has this additional immeasurable advantage that it does not allow the presence of an infection to disturb the useful work which we have in hand.

### DRUGS AND RESPONSIBILITY.

In a recent issue of this *Journal* Dr. W. R. Boyd reported the clinical and pathological notes of a highly important case of heroin poisoning. The patient died of the poisonous effects of an overdose of heroin, which had been given instead of veronal in a cachet prescribed by Dr. Boyd. From the evidence of the Government Analyst it appears that the quantity of heroin enclosed in the cachet did not coincide with the dose by weight of the barbitone ordered. An inquest was held by the City Coroner, and an assistant at the pharmacy at which the prescription was dispensed, was committed for trial on the charge of murder. It appears that this man, Arthur William



Allwright, and a registered pharmaceutical chemist, Miss Eileen Alice Angwin, were the only persons in the pharmacy when the prescription was handed in. The Chief Justice tried the case on December 20 and 23, 1918, at the Criminal Court of Victoria. The charge was reduced to one of manslaughter, on the ground that there was no evidence to justify the more serious charge. The Coroner had not hesitated in ascribing a motive to the alleged crime. The evidence was to the effect that Miss Angwin denied that she had made up the cachets, but stated that they had been prepared by Allwright. Allwright, on the other hand, denied that he dispensed the prescription. Heroin was kept in a poison cupboard, and when the pharmacy was searched after the event, the bottle was found in its proper place. In these circumstances neither the Judge nor the jury was able to determine who had made the mistake in substituting a dangerous drug for one prescribed by Dr. Boyd. Allwright was consequently found "not guilty," and the following rider was added to the verdict.

We think that the Pharmacy Act should be altered so that it be insisted on in future that all prescriptions made up in chemists' shops should be signed and dated by the person who made them up, so that direct responsibility can be placed on that person at once.

This recommendation will meet with approval. Apparently the law is defective in regard to the responsibility for the accurate dispensing of prescriptions, and it should, therefore, be amended at once. When a medical practitioner writes a prescription and this prescription is taken to a pharmacy to be dispensed, both the medical practitioner and the patient have a moral right to assume that the medicine supplied is composed of pure drugs of the nature of those ordered and in the quantities ordered. Both the medical practitioner and the patient are justified in assuming that the full responsibility for the accuracy of the dispensing is borne by the proprietor or manager of the pharmacy. We contend that no one other than a registered pharmaceutical chemist should be allowed to dispense a prescription, and further that "covering" in pharmacy should be regarded as an ethical offence, as it is in the case of medical practice. The question of responsibility is a very serious one, and some guarantee must be given that a mistake can be traced to its origin, and that the punishment can be

meted out to the person responsible for the mistake.

Another recent occurrence indicates that the responsibility of pharmacists is taken much too lightly. At the Sydney Hospital in November, 1918, a man died on the day following the administration of a barium-porridge X-ray meal. It was found that death was due to poisoning by barium sulphite, and further investigation revealed that the barium salt was taken from a supply delivered by the Australian Drug Company. The tin was labelled "barium sulphate," but on analysis it was found to contain impure or commercial barium sulphite, with about 15.6% of barium sulphate. The Coroner at the inquest found that there was no evidence of criminal negligence. A man's life was lost by the administration of one drug in the place of another prescribed by a medical practitioner. In this case the persons concerned were a firm of wholesale druggists and a staff of pharmacists under the control of the chief dispenser of the Hospital. Pharmacists are required to study chemistry and pharmacology, in order that they may be able to satisfy themselves that the substances which they handle, are those substances named in the prescriptions to be dispensed. The art of dispensing or compounding a mixture or a pill can be acquired without any knowledge of chemistry. A pharmacist, however, must accept the full responsibility for the purity of the drugs he employs in preparing medicines. For this purpose a knowledge of chemistry is essential. The public looks for the proper exercise of knowledge in the pharmacy, as it looks for the proper exercise of knowledge by a medical practitioner. A medical practitioner would be morally and legally responsible for the death of a patient to whom he had administered an overdose of a poisonous drug. He would have no defence if he made a mistake in a prescription which led to the death of his patient. He would be morally responsible if he gave a hypodermic injection of a dangerous drug in mistake for a less active drug and if the mistake led to the death of his patient. In other words, a medical practitioner has the same obligations as a pharmacist if he undertakes to dispense his own prescriptions or if he procures from a wholesale house drugs for hypodermic medication. In the vast majority of cases he accepts the guarantee of the firm from whom he purchases his drugs and relies

on this guarantee. A fatal mistake, however, is one for which he must be held responsible. Careful practitioners and pharmacists will welcome the introduction of legal provisions attaching the responsibility to the person in whose hands the possibility of a mistake lies.

#### ELECTROMYOGRAPHY.

Einthoven's remarkable studies of the electrical discharges accompanying the heart beat have already led to a complete revolution of the conception of the pathology of disturbances of the cardiac muscle. Although it is over fifty years ago since Kölliker and Müller demonstrated that the contraction of the muscle of the ventricles and auricles was associated with a measurable electrical discharge, it was not possible then to ascertain the peculiarities of the discharges in normal and in abnormal condition until Einthoven, in the early years of the present century, introduced his string galvanometer and demonstrated the component parts of the discharges induced by the complicated action of the heart beat. It has subsequently been recognized that a similar electrical discharge is given off from every muscle acting in the body, and that under certain circumstances information could be gained concerning the muscular state by a study of the records of the electrical discharges. In 1910 Wertheim Salomonson endeavoured to analyse the electrical discharges accompanying the contractions in ankle and patellar clonus in numerous cases of organic nerve lesions. Previous to this work, all the observations on clonus had been carried out clinically, without any mechanical or graphic records, and, although these clinical observations were carried out with remarkable accuracy, it had become quite evident that the absence of accurate measurements of time and of amplitude formed a bar to the further elucidation of the problems. An important preliminary study of muscular action by electromyography was carried out at same time as Salomonson's work by Piper. This investigator described certain action currents under the term "impulse of innervation." The early investigators of clonus with the electromyograph refer to the action currents, both small and large, recorded in clonus, as being identical to Piper's impulse of innervation. Piper showed that when an electrode, applied to the belly of a muscle to be examined, is attached to one of the leads of a string galvanometer, and the second electrode is applied to a situation on the skin surface not far removed from the muscle, but sufficiently removed from any muscle that may be in action during the tests, the continuous circuit through the muscle and galvanometer will undergo definite changes when the muscle is in action. The string of the galvanometer usually employed has a resistance of 5,000 ohms. For practical work it is advisable to adjust the galvanometer with the string

at such a tension that one millivolt causes a deflection of one centimeter on the record. Dr. Stanley Cobb<sup>1</sup> has endeavoured to carry the work done in connexion with ankle and patellar clonus a little further, and to throw fresh light on the characters of the contractions of true clonus, as compared with tetanic contractions, and with what is termed hysterical clonus. His studies were confined to five patients, all of whom were suffering from organic nervous lesions. In the course of his observations he was able to ascertain the significance of certain slow waves, which were noted in the records of the earlier workers. He found that when the membrane used to limit the area of application of the electrode became slightly retracted, the solution leaked out of the electrode, and this gave rise to the slow waves. The electromyogram of clonus, as reproduced by Dr. Cobb, is a characteristic record, and demonstrates the rate of the clonus, the amplitude of the waves and the nature of the action currents. He found that rate of the clonus is not affected by fatigue, but is remarkably constant once a steady rate has been established. An apparent fallacy was produced by the tiring of the assistant, who was required to hold the foot with the gastrocnemius strongly and steadily stretched. It seems that until a mechanical device is substituted for manual stretching, the records will necessarily include this source of error. It was found, however, that renewed stretching by a fresh assistant immediately resulted in the increase of the clonus rate to the former level. Similarly, the records show that the amplitude of the waves varies only with the strength of the stimulus and the rate of the clonus. He does not attach much importance to the rate of the action current as recorded. The small waves, which were not regarded as true action currents, were not counted, and in this way the calculation became to some extent arbitrary. This point can only be overcome by the complete prevention of leakage of solution from the electrodes. Dr. Cobb prefers to ignore the rate of the action currents altogether. There is, nevertheless, evidence of a variation of the number of action currents per contraction with variations in the type of the clonus. He points out that further study is necessary to establish whether clonus is a series of reflex symptoms. It has been established that the reflex time of the knee jerk is about 0.011 seconds. On the other hand, the periodicity of the clonus is 0.15 seconds. It is not known whether the relaxation time of the muscle accounts for the difference, nor has it been established whether a summation of stimuli through the proprioceptors is needed to call forth a fresh contraction. That central inhibition exercises some effect on this slowing of the reflex time appears to be certain. Neurologists will find a continuation of this study both fascinating and profitable, and we have no doubt that they will gradually unravel the mysteries of muscular contraction in clonus by these graphic means. We understand that within recent months a first-class string galvanometer has been made in Sydney. This means that Australian investigators will have at their disposal the essential instrument, and will not be dependent on the chance importation of one from Europe or America.

<sup>1</sup> Bulletin of the Johns Hopkins Hospital, November, 1918.

## Abstracts from Current Medical Literature.

### THERAPEUTICS.

#### (74) Drugs and Dysentery.

J. M. Cowan and H. Miller discuss the use of drugs in bacillary dysentery (*Journ. Roy. Army Med. Corps*, October, 1918). They hold strongly that any attempt to check diarrhoea is not only injudicious, but is actively harmful. Free evacuation of the bowels is desirable until faecal material appears in the stools. They recommend 4 gm. doses of magnesium sulphate every four hours in the early stages, and subsequently an efficient dose every morning. Regular inspection of the stools affords information to guide the exhibition of magnesium sulphate. When a patient with diarrhoea has to undertake a journey, a large dose of opium may be given to alleviate distress. In a few cases in which the stools show that there is little catarrhal change in the intestines though diarrhoea continues, small doses of opium are highly beneficial. The authors use large doses (4 gm.) of bismuth carbonate every two, three or four hours, and subsequently in lessened amount. The bismuth does not yield a satisfactory emulsion with tragacanth, but may be suspended in thin arrowroot. Provided the stools turn black, bismuth can be advantageously exhibited. If the stools are not blackened, the aperient treatment with magnesium sulphate should be resumed. Opium should be used as a sedative at night, to ensure rest and sleep. Enemata are contra-indicated in the acute stages. In the later stages douches are of value, especially when mucus, blood or pus around normal faeces indicate that the inflammatory process is situated not far from the anus. A half to one litre may be given, but the flow is checked when pain or discomfort is felt. The long tube is not needed, and an ordinary Higginson's syringe, with a suitable nozzle, may be used. Sodium bicarbonate (0.8%) is beneficial in cases with much mucus. Eusol and saline solution in equal parts is bland. Protagol (5%) seems sometimes of value in protracted cases. Its use is less painful than that of silver nitrate. In protracted cases a careful examination with the fingers and the proctoscope is necessary. In a few cases with choleraic symptoms, intravenous injections of saline solution are indicated.

#### (75) Prophylaxis of Malaria.

G. T. Rawnsley, R. A. Cunningham and J. Warnock record the results of an anti-malarial campaign in Macedonia in the winter months of 1917-18 (*Journ. Roy. Army Med. Corps*, October, 1918). On the strength of the results of preliminary experiments on the intensive treatment of malaria by large doses of quinine, 38,433 persons received a course of treatment lasting 24 days. Of the total number treated 23,071, or 60%,

were known to have had an attack of malaria, but the number infected was undoubtedly higher. During the course of the treatment 424, or 1.83%, had a relapse, during the first month after treatment 1,695, or 7.34%, relapsed, and during the second month after treatment 2,750, or 11.91%, relapsed. Altogether, 4,869, or 21.08%, suffered a relapse. The authors conclude that complete sterilization of the blood, even by such a course of intensive treatment with quinine, cannot be claimed. Efficient measures were taken to ensure thorough treatment and correct dosage. Apart from this, the troops were anxious to be cured. Quinine is therefore held to have no permanent power of sterilization. The quinine was given in a mixture night and morning. Each dose contained one gramme of sulphate of quinine. The mixture contained also sulphuric acid, rectified spirit, spirits of chloroform, and solution of arsenic, sugar and oil of peppermint.

#### (76) Internal Secretion of the Thyroid Gland.

J. M. Rogoff has endeavoured to detect in the blood coming from the thyroid gland a substance whose physiological activity corresponds to that of the glandular tissue (*Journ. Pharmacol. and Exper. Therapeutics*, October, 1918). He has made use of the observation that tadpoles undergo rapid emaciation and acceleration of metamorphosis when fed upon thyroid gland. It has already been discovered that this effect is proportional to the amount of thyroid tissue administered and to the amount of iodine present in the thyroid gland. Three dogs were employed in the investigation. Blood was collected from a thyroid vein. The central end of the vagus was stimulated and blood was collected from the gland during the stimulation. Blood was also taken from the left iliac vein. The specimens of blood were dried at 55° C. in an oven. The two lobes of the thyroid glands were removed, dried and powdered. In the material from two dogs no iodine could be detected, but in both lobes of the thyroid gland of the third dog and in one sample of blood from the thyroid vein iodine was detected. It was then noticed that the notes recorded much manipulation of the gland, owing to a clot in the cannula while this sample was taken. The samples which contained iodine all showed the characteristic effect on the growth of the tadpoles, while the remaining samples did not effect the tadpoles. Histological examination of sections of small portions of the thyroid glands showed great differences in appearance. In the sections from the dog with the physiologically active gland, the alveoli were filled with colloid, while the other glands showed no colloid, but presented the structure of immature thyroid tissue.

#### (77) Novarsenobillon in Simple Tertian Malaria.

J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie, C. F. Cooper and H. F. Carter record the results of a single injection of novarsenobillon into patients suffering from simple

tertian ague (*Annals Trop. Med. and Parasitology*, October, 1918). The doses employed were 0.45 gm., 0.6 gm. and 0.9 gm. intravenously. Twenty patients received the intravenous injections of 0.45 gm. novarsenobillon. Their blood was examined twice daily. Parasites disappeared from the blood in twenty-four to forty-eight hours. The temperature fell to normal within 72 hours. In 17 of the 20 patients a parasitic relapse occurred in 11 to 27 days, with an average of 18 days. In three of the 20 patients no relapse took place during a period of sixty days' observation. In the 17 patients who relapsed parasitically, febrile relapses occurred in 15 to 30 days, with an average of 20 days. Twenty-three patients received 0.6 gm. intravenously. In 22 of the 23 patients a parasitic relapse occurred in 10 to 46 days, with an average of 20 days. The remaining patient did not relapse during a period of observation of 108 days. Twenty-one patients received 0.9 gm. novarsenobillon. In 19 of the 21 patients a parasitic relapse occurred in 5 to 47 days, with an average of 19 days. The remaining two patients had not shown a relapse during 60 days' observation. The authors conclude that a single injection has practically no curative effect in the doses used.

#### (78) Seasonal Variation in the Cure of Malaria.

J. W. W. Stephens, W. Yorke, B. Blacklock, J. W. S. Macfie, C. F. Cooper and H. F. Carter have been led to detect a seasonal factor in the results of treatment of patients suffering from simple tertian ague (*Annals Trop. Med. and Parasitology*, October, 1918). In their investigations treatment has not been commenced until after a microscopical diagnosis. Examinations of the blood have been made daily. The relapses are, in all cases, parasitic. The term cure is used to signify no parasitic relapse within a period of observation for 60 days. During this period daily blood examinations have been made. The authors claim that, in considering the result of any treatment, patients lost sight of before the end of the period of observation, should be included among those relapsed. They give a maximal and minimal figure for each series on this basis. In a series of 76 patients treated by the oral administration of 6 gm. on each of two consecutive days, 57% to 62% were cured. In a second series of 89 patients treated in the same way, 3% to 6% were cured. A thorough examination of the conditions of the two series showed that the quinine was identical in both series, that the strain of the parasites was similar in a sufficient proportion of cases, and that the length of time between the date of infection and the treatment was not dissimilar. It was soon evident that the first series were treated between July and September and the second series between January and April. The authors noted that the curve of the percentage of cures runs parallel to the curve of the mean daily temperature. They consider that the external temperature influences the effect of quinine on the parasites.



## PÆDIATRICS.

## (79) Hypothyroidism in Children.

It has been established during the last few years that the delinquent, backward and mentally defective child is the frequent end-result of a disturbed metabolism, produced by a derangement of the glands of internal secretion. There is an intimate co-relationship between the different hormones, so that, generally, no one endocrine substance is at fault alone, but all are involved to a greater or less degree in any disease which threatens the integrity of one. In the majority of cases hypothyroidism is the predominating factor. Gordon (*Arch. of Pediatrics*, October, 1918) reports a series of 55 cases of hypothyroidism, 34 being mild in type, 21 being definitely cretinous. The age varied from one to twelve years; the sex incidence was not definitely marked. The nationalities showed a predominating foreign (to America) element. Birth trauma was not a causal factor, nor was syphilis, and many of the children were breast fed. The manifestations of thyroid dyscrasia appear in two groups: (a) physical, (b) mental defects. (a) The physical defects observed were backwardness in the development of the power of holding up the head, of sitting, of standing, of walking and of talking, and in the process of teething. To this may be added certain changes in the bony system, skin and appendages, and deviations from the normal due to disturbed metabolism. (b) The mental defects ranged from a slight dulness to the more marked aberration seen in the cretin. In the author's series the most frequent delinquency was observed in the speech function. About 60% did not talk and late talking was the rule. The next most frequent defect was noted in the power of voluntary muscular co-ordination. Delay in sitting up and late walking was very common. Teething was late, often beginning after the tenth month, and if early dentition occurred, caries was evident and extensive. The proportion of decayed and mal-occluded teeth was very large. There was usually marked deficiency in height and weight, and constipation was the rule. Vision and hearing were usually not impaired. Enuresis was present in twelve cases. Anterior fontanelle closure was delayed in all the cases. High, arched palate was common. Treatment was usually followed by marked improvement in the physical defects, whereas the mental condition did not improve so rapidly or to the same extent. Calomel was first given, 0.006 gm. for ten doses, followed by a saline. Then thyroid extract, 0.006 gm. thrice daily, was given for ten days, then glycerophosphates of lime and soda for one week, then thyroid extract, 0.0075 gm. thrice daily. The alternation was adhered to, and the dose of thyroid increased until 0.18 gm. daily was given as a maximum. The thyroid extract was immediately suspended on the appearance of nervous, gastric or cardiac symptoms of overdose, to be resumed later in smaller dose. The prognosis depends on the age at which treatment is instituted and on

the regularity and length of treatment. The secret of success is early and long-continued treatment.

## (80) The Gastro-Intestinal Tract and the Excretion of Poisons.

It is well recognized that a part of the poisons absorbed by the blood is excreted in the gastro-intestinal tract and produces certain effects upon its mucous membrane. In diseases of the intestinal tract the clinical signs and the pathological-anatomical findings of infants usually differ from those of adults. Okubo (*Amer. Journ. of Dis. of Children*, December, 1918), in a series of experiments with animals, compares the function of the gastro-intestinal mucosa in regard to the excretions of poisons and the changes produced thereby in young animals with that found in grown animals. He divides the poisons into five groups, according to the principal region of their excretion: (1) Poisons distinctly excreted into the stomach, e.g., snake poison. (2) Those excreted into the small intestine, e.g., arsenic, ricin, cantharidin, cholera toxin. (3) Those excreted into the caecum and large intestine, e.g., bismuth, mercury and dysentery toxin. (4) Those excreted into the lower bowel, with affection of the small intestine as well, e.g., chromium and paratyphoid B toxin. (5) Those not excreted into any special region, e.g., silver salts. Excretion of poisons by the mucous membrane of the gastro-intestinal tract seems to arise in three ways: (1) secretion by epithelial cells; (2) phagocytosis of the migratory cells; (3) phagocytosis of the reticulo-endothelial cells in the lymph follicles of the intestine. The changes set up in the mucous membrane depend on the quality of the poison. (a) Catarrhal changes occur with silver, bismuth, chromium, cantharidin and cholera toxin. (b) Hemorrhagic changes occur with arsenic and ricin. (c) Necrotic changes follow mercury, snake poison, paratyphoid B and dysentery toxins. These changes, however, vary in intensity with the dose of the poison, the animal employed in the experiment and the special area of mucosa examined, as every poison has its greatest affinity for one special region. In young animals it is found that (1) the excretion takes place diffusely, and is consequently thinned; (2) the enteritis by excretion is anatomically of a diffuse character and less specific to each poison offered; (3) the destructive process is relatively distinct in regard to the histological findings, showing a diffuse epithelial alteration, while the reactive process is slighter in comparison with that present in grown animals. In most cases of nutritional disturbance or infectious enteritis of infants the pathological-anatomical lesions are of a diffuse nature in all regions of the intestinal tract, and are often specially distinguished by diffuse changes in the epithelial cells. Infective diseases of the intestine of infants, such as dysentery and typhoid, often present atypical clinical signs, and the bowel lesions often appear less severe than with adults, the localization of the lesions being atypical and diffuse. These characteristics in infants closely re-

semble those found in the "enteritis by excretion" of very young animals, and is probably due to the imperfection of the development and function of their intestinal mucosa.

## (81) Mercurial Preparations in Congenital Syphilis.

Owing to the difficulty in detecting mercury in the body fluids, little light has been thrown on the question as to what extent the different forms of mercury were absorbed and how eliminated. It has been found that the excretion of mercury in the urine offers a means of estimating the amounts of mercury circulating in the body and the duration of its action. This ratio of "mercury in the circulation" to "mercury in the urine" is probably constant. From a series of experiments on mercurial absorption in children Ramsay and Ziegler (*Amer. Journ. of Dis. of Children*, November, 1918) conclude that (1) in infants and children mercury, when given by the mouth, by inunction or intra-muscularly, is excreted, at least partly, in the urine; (2) in new-born infants and older children, mercurial ointment, when placed in contact with the skin, without any friction being used (protected and sealed by wax-paper from being volatilized and inhaled) is taken up by the skin and excreted in the urine, and continues to be thus excreted for a variable time after all treatment has been discontinued; (3) by inunction mercury is readily taken up by the skin and eliminated in the urine, and continues to be eliminated for a considerable time; (4) when one inunction is given, the maximum daily amount of mercury is usually eliminated during the following twenty-four hours, smaller amounts being eliminated for a variable time; (5) where continuous inunctions are given, there is an accumulation in the system and considerable amounts are eliminated at intervals with only traces between; (6) it is therefore probable that it is unnecessary to have mercury in contact with the skin, either with or without rubbing as often or as long as has been generally thought necessary; (7) mercury salicylate suspended in oil and given subcutaneously continues to be eliminated in the urine in appreciable amounts for eight days, or longer, the daily amounts varying widely. It is, therefore, probable that a repetition of the treatment, not often than at intervals of eight days, would be sufficient; (8) mercuric chloride by intra-muscular method continues to be eliminated for eight days or longer; (9) in all cases in which mercuric chloride was used, either by mouth or intramuscularly, protein was found in the urine; (10) calomel, 0.016 gm. every two hours for four doses, and grey powder, 0.03 gm. every three hours for three doses, continued to be eliminated in appreciable amounts in the urine for as long as nine days, the maximum daily elimination usually occurring during the 24 hours following administration. Probably the daily use of any of the mercurial salts in the amounts usually prescribed is unnecessary and presumably harmful.

## Naval and Military.

### CASUALTIES.

After the lapse of some considerable time, a casualty list, the 458th, containing under a thousand names, has been issued. Among those who have died of "other causes" is the entry of Major Miles Charles Carrington Seton. It is announced that Captain Clyde Isaac Davis and Captain Colin Lynne Harvey are ill.

### APPOINTMENTS.

The following appointments, etc., have been announced in the *Commonwealth of Australia Gazette* of the 26th of February, 1919:—

#### Permanent Naval Forces of the Commonwealth (Sea-Going).

##### APPOINTMENT.

##### To be Surgeon—

Temporary Surgeon Ronald Augustus Hobbs, R.N., date of appointment, 10th September, 1918; seniority in rank, 4th August, 1914.

#### Citizen Naval Forces of the Commonwealth.

##### ROYAL AUSTRALIAN NAVAL BRIGADE.

##### Appointment—

Surgeon Lieutenant-Commander William Arthur James is appointed Assistant to District Naval Medical Officer at Melbourne, to date from 1st July, 1918.

##### Termination of Appointment—

The temporary appointment of the following officer is terminated on the date shown on reversion to the Royal Navy: Surgeon Eric Mackinnon Molesworth. Dated 21st June, 1918.

#### Australian Imperial Forces.

##### APPOINTMENTS TERMINATED.

##### First Military District—

Captain T. O. Chenoweth. Dated 1st February, 1919.

##### Second Military District—

Lieutenant-Colonel C. W. Thompson, M.C. Dated 22nd February, 1919.

Captain I. M. Barrow. Dated 8th February, 1919.

##### Third Military District—

Major G. S. Robinson, M.C. Dated 15th February, 1919.

##### Fourth Military District—

Colonel H. A. Powell, C.M.G. Dated 8th March, 1919.

Lieutenant-Colonel E. A. H. Russell. Dated 14th February, 1919.

#### Australian Military Forces.

##### SECOND MILITARY DISTRICT.

##### Australian Army Medical Corps Reserve—

Honorary Captain W. S. Brown to be granted the temporary rank and pay of Major whilst employed as Pathologist at No. 4 Australian General Hospital. Dated 1st January, 1919.

Honorary Major (temporary Lieutenant-Colonel) R. B. Wade relinquishes the appointment of Consulting Orthopaedic Specialist at Head-Quarters and the temporary rank of Lieutenant-Colonel. Dated 31st December, 1918.

Honorary Major R. B. Wade to be granted the honorary rank of Lieutenant-Colonel, temporarily. Dated 1st January, 1919.

##### FOURTH MILITARY DISTRICT.

##### Australian Army Medical Corps Reserve—

Honorary Captain H. Powell, M.C., to be granted the temporary rank and pay of Major whilst employed as Registrar, No. 7 Australian General Hospital. Dated 12th November, 1918.

##### FIFTH MILITARY DISTRICT.

##### Australian Army Medical Corps Reserve—

William Henry Rigby to be Honorary Captain. Dated 1st February, 1919.

It has been announced in the *South Australian Government Gazette* of February 13, 1919, that a Commission has been appointed to enquire into and report upon the proposal to purchase a certain site in the Hundred of Yatala on which a Mental Hospital may be built. The Commissioners are the Honourable Walter Hannaford, M.L.C., Chairman, Mr. A. J. Blackwell, M.L.A., and Captain J. A. Southwood, M.L.A. The appointment of this Commission must be regarded as a definite movement on the part of the Government to make proper provision for the care of the insane. It has long been recognized that the Hospital at Parkside no longer fulfils the requirements of a modern hospital where therapeutic measures can be carried out. We trust that when the site is secured, the plans will be drawn up under the guidance of expert psychiatrists and the architectural characters will be made to conform with the utilitarian purposes of the institution.

## Public Health.

### NEW SOUTH WALES.

The following notifications have been received by the Department of Public Health, New South Wales, during the week ending February 15, 1919:—

	Metropolitan Combined District. Cs. Dths.	Hunter River Combined District. Cs. Dths.	Rest of State. Cs. Dths.	Total. Cs. Dths.
Enteric Fever ..	5 1 ..	3 1 ..	15 0 ..	23 2
Scarlatina ..	6 0 ..	0 0 ..	29 0 ..	35 0
Diphtheria ..	27 1 ..	5 0 ..	25 0 ..	57 1
*Pul. Tuberculosis	24 8 ..	1 0 ..	24 1 ..	49 9
C'bro-Sp'l Menin.	0 0 ..	0 0 ..	1 0 ..	1 0
Pneumonic Inf'nza	33 1 ..	0 0 ..	11 0 ..	44 1

\* Notifiable only in the Metropolitan and Hunter River Districts, and, since October 2, 1916, in the Blue Mountain Shire and Katoomba Municipality.

### VICTORIA.

The following notifications have been received by the Department of Public Health, Victoria, during the fortnight ending February 15, 1919:—

	Metropolitan. Cs. Dths.	Rest of State. Cs. Dths.	Total Cs. Dths.
Enteric Fever ..	2 2 ..	16 1 ..	18 3
Scarlatina ..	31 1 ..	34 0 ..	65 1
Diphtheria ..	95 3 ..	83 2 ..	178 5
Pulmonary Tuberculosis	36 11 ..	12 7 ..	48 18
C'bro-Spinal Meningitis	1 0 ..	1 1 ..	2 1
Puerperal Fever ..	1 0 ..	3 0 ..	4 0
Influenza ..	— ..	— ..	2354 280

The number of cases of Influenza reported during the week ending February 2, 1919, was 1,241 and the number of deaths was 52.

### QUEENSLAND.

The following notifications have been received by the Department of Public Health, Queensland, during the fortnight ending February 8, 1919:—

Diseases.	No. of Cases.
Enteric Fever ..	63
Scarlatina ..	10
Diphtheria ..	82
Pulmonary Tuberculosis	23
Cerebro-Spinal Meningitis	3
Poliomyelitis ..	21
Erysipelas ..	8
Anchylostomiasis	2
Pneumonia ..	17

### SOUTH AUSTRALIA.

The following notifications have been received by the Central Board of Health, Adelaide, during the three weeks ending February 8, 1919:—

	Adelaide. Ca. Dths.	Rest of State. Ca. Dths.	Total. Ca. Dths.
Enteric Fever .. .. .	1 0 ..	6 0 ..	7 0 ..
Scarlatina .. .. .	7 0 ..	52 0 ..	59 0 ..
Diphtheria .. .. .	1 2 ..	52 0 ..	53 2 ..
Pulmonary Tuberculosis	3 5 ..	33 7 ..	36 12 ..
Erysipelas .. .. .	0 0 ..	8 0 ..	8 0 ..
Morbilli .. .. .	9 0 ..	44 1 ..	53 1 ..
Pertussis .. .. .	7 0 ..	53 0 ..	60 0 ..
Malaria .. .. .	1 0 ..	0 0 ..	1 0 ..
Pneumonic Influenza ..	29 0 ..	6 0 ..	35 0 ..
Influenza Vera .. .. .	0 0 ..	2 0 ..	2 0 ..
Influenza .. .. .	2 0 ..	22 0 ..	24 0 ..
Doubtful Influenza ..	1 0 ..	1 0 ..	2 0 ..

## TASMANIA.

The following notifications have been received by the Department of Public Health, Tasmania, during the fortnight ending February 7, 1919:—

Diseases.	Hobart. Cases.	Launceston. Cases.	Country. Cases.	Whole State. Cases.
Enteric Fever .. .. .	1 ..	2 ..	17 ..	20 ..
Scarlatina .. .. .	0 ..	1 ..	3 ..	4 ..
Diphtheria .. .. .	1 ..	2 ..	17 ..	20 ..
Pulmonary Tuberculosis	5 ..	2 ..	1 ..	8 ..
C'bro-Spinal Meningitis	1 ..	0 ..	0 ..	1 ..
Puerperal Fever .. .. .	0 ..	0 ..	1 ..	1 ..
Poliomyelitis .. .. .	0 ..	0 ..	1 ..	1 ..

## WESTERN AUSTRALIA.

The following notifications have been received by the Department of Public Health, Western Australia, during the fortnight ending February 1, 1919:—

	Metro- politian. Cases.	Rest of State. Cases.	Totals. Cases.
Enteric Fever .. .. .	6 ..	5 ..	11 ..
Scarlatina .. .. .	15 ..	13 ..	28 ..
Diphtheria .. .. .	14 ..	10 ..	24 ..
Pulmonary Tuberculosis	11 ..	10 ..	21 ..
Erysipelas .. .. .	2 ..	1 ..	3 ..
Malaria .. .. .	16 ..	0 ..	16 ..
Purulent Ophthalmia ..	1 ..	0 ..	1 ..

Arthur Roy Hunt, Esq., M.B., Ch.M., 1918 (Univ. Sydney), of No. 4 Australian General Hospital, Randwick, New South Wales, has been nominated for election as a member of the New South Wales Branch of the British Medical Association.

## Hospitals.

## THE ALFRED HOSPITAL.

The annual report of the Alfred Hospital for the year ending June 30, 1918, contains a few general statistics concerning the number of patients under treatment in the Hospital during the year and a table setting forth the growth of the institution. It appears that during the last ten years the number of patients admitted into the wards has varied from 2,344 to 2,801. The number admitted during the year under review was 2,544. The number of deaths has varied within an even larger range. In 1908-9 the number was 214 and in 1915-16 it was 398. In 1917-18 it was 294. The mortality was lowest in 1909-10 (8.58%) and highest in 1915-16 (14.2%). In the year under review it was 11.5%. On the other hand, the number of out-patients and patients treated in the Casualty Department during the year 1917-18 represents a material increase on the figures of previous years.

The Managers state that they have been reluctantly compelled to make a special appeal to the public for funds to enable them to erect more commodious out-patient and casualty rooms. They asked for £15,000, and obtained nearly that amount.

As a result of a prolonged controversy in the public press the number of hours of duty prescribed for the nurses has been reduced by six per week. It was found impracticable to secure the services of an adequate number of persons

trained in massage without remuneration, and consequently three masseuses were engaged at a small salary.

Regret is expressed at the loss sustained by the Hospital by the death in action of Dr. W. W. Hearne and of the late Medical Superintendent, Dr. C. A. Stewart. During the period covered by the report seven members of the honorary medical staff were absent abroad on military service. Several of the members were engaged in part-time military service at home, while Drs. Ewing and Anderson were granted indefinite and six months' leave respectively, to enable them to carry on full-time service in the Australian Army Medical Corps. We are gratified to note that, notwithstanding the fact that a large number of retirements from the staff would have taken place in normal times, it was resolved that, under the exceptional circumstances arising from the war, the members of the honorary staff, including the acting members, should be temporarily re-appointed.

The managers record with regret the death of three of their number—Messrs. S. Jacoby, H. B. Gibbs and J. H. Flack. Each of these deceased gentlemen had rendered good service to the Hospital. Mr. Flack had been associated with the management for over 34 years. In recognition of this fact, his elder son was appointed to succeed him, while Messrs. R. W. Knox and David Gibb were selected for the other two vacancies.

The total income, including the balance brought forward from the previous year, amounted to £20,447. Of this sum, the Government contributed as a grant £4,080, while the municipalities yielded £554. A further Government grant of £842 was paid by the Department of Public Health towards the expenses of the night clinic. The charitable public provided £5,774, while the patients paid £6,039, or practically 30% of the total income. The Managers call attention to the fact that this sum is larger than in previous years, owing to some extent to the payments made by the patients attending the night clinic for venereal diseases. The number of patients treated at this clinic was about 200 per week.

The average cost per in-patient was £7 6s. 2d., which is 4s. 2d. more than in the previous year. The average cost per bed is given at £121 11s.

On June 30, 1917, there were 142 patients in the Hospital. During the course of the year 2,402 patients were admitted, while on the last day of the twelve months there were 155 in the Hospital. The number of deaths was 294. The death-rate was therefore 12.27% and not 11.5%, as set out in the table.

A statistical statement compiled by the Medical Superintendent is appended to the report. The table is valuable in ascertaining the case mortality and the frequency of the various diseases treated. The Medical Superintendent has been wise in including in his summary only those who have been discharged or who have died. At the present moment interest attaches largely to the figures given for pneumonia and broncho-pneumonia. The total number of cases treated during the year of these two diseases was 165, and the total number of deaths was 30. This represents a case mortality of 18.18%. Only one death is recorded among 30 patients suffering from enteric fever, while none of the nine patients suffering from diphtheria died. There were eight cases of cerebro-spinal meningitis, with two deaths; four cases of tubercular meningitis, with three deaths, and three cases of acute miliary tuberculosis, without a recovery. The table is full of other interesting data, to which we may refer on future occasions in dealing with the several pathological conditions named therein. There is a further table setting out the operations performed and the results obtained, which is also of value. From the record of the clinical pathologist, it appears that a considerable amount of histological and bacteriological work was carried out during the year.

## Obituary.

## ELIZABETH MARY SWEET.

Elizabeth Mary Sweet died of pneumonia complicating influenza on February 5, 1919, after twelve days' illness. She was born in 1887, and was the second daughter of Mr. George Sweet, of Brunswick, Victoria. She was educated at Brunswick College, and entered the Medical School of the Melbourne University in 1903. She was a brilliant student and was noted for her keenness and hard work. She had prac-



tically completed her fifth year in 1908, when she was attacked by enteric fever. As a sequel to this infection she suffered from a double pneumonia, from which she recovered after the lapse of a considerable time. It was a full year before she was able again to take up her student work. In 1910 she presented herself for her degree in medicine and passed the examination with honours. In the following year she took her degree in surgery. At first she served as Resident Medical Officer at the Queen Victoria Hospital for Diseases of the Eye and Ear, where she extended her sphere of knowledge and gained valuable practical experience, which later stood her in good stead. She secured the appointment of Resident Medical Officer at the Lady Lamington Hospital at Brisbane and, on July 1, 1913, she was appointed additional full-time Medical Inspector of Schools in the Department of Public Instruction of Queensland. Although the appointment was gazetted as from July, in her first report she referred to her "appointment in October." During the last three months of 1913 she carried out her duties in Ipswich. A perusal of her report discloses an unusual aptitude for the work she had undertaken to carry out. Her association with Dr. Eleanor E. Bourne appears to have been of the happiest description, and the evident result was a net gain on the part of the children in the Queensland schools. In the year 1914 her sphere of activity extended along the Cairns to Mareeba railway, from Charters Towers to Townsville and in the south coast district, south of Brisbane. We have remarked, from time to time, on the policy of the Department in limiting the space at the disposal of the medical inspectors to a couple of pages each, while scores of pages are devoted to far less important matters. Notwithstanding this restriction, Elizabeth Mary Sweet succeeded in conveying a living picture in the account of her work, and demonstrated unconsciously many of the excellent qualities which rendered her so valuable a medical officer. During the year 1915 she endeavoured to ascertain the effects on the general health and local bodily condition of children of tropical conditions. In the course of a short report she compared the frequency of defects of various kinds met with in the tropical latitudes between  $20^{\circ}$  and  $10.33^{\circ}$  with those met with in the more temperate areas of the State. While she found that there was apparently little difference, she was obviously alive to the less favourable environment active in the north. Her investigations were not carried on long enough, nor were they conducted under the essential conditions to have led her to recognize the social and medical significance of hookworm infection in the tropics. Her frequent reference, however, to a "sanitary conscience" indicates that, had the opportunity offered itself, she would have followed out these investigations as keenly as she did the investigations connected with the other part of her work.

In 1916 she obtained leave of absence to enable her to take up work in Melbourne in connexion with the war. She had already made numerous observations in connexion with the Arneth index, and she continued these investigations on her return to Melbourne. As a result of this work, she wrote a thesis, which gained for her the degree of doctor of medicine at her old University. It was our privilege to have been enabled to publish a portion of this thesis in this *Journal*, in September of 1917. Whatever views may be held concerning the true value of the Arneth index, no second opinion can be expressed concerning the accuracy of her work and the admirable manner in which she presented her facts. She served as Resident Medical Officer at the Women's Hospital for six months, and did other work in Melbourne. After a time it became necessary, for private reasons, for her to resign her position in the Department of Public Instruction of Queensland. She then took up private practice at Camberwell, and undertook honorary duties at the Melbourne Hospital, at the Children's Hospital and at the Queen Victoria Hospital for the Eye and Ear. For a series of months she was in charge of the Baby Health Centre at the Richmond Town Hall.

Elizabeth Mary Sweet had a fascinating method of dealing with children. The fear of seeing the doctor became dispelled almost instantaneously by her sympathetic bearing and soothing influence. She was one of those women who have demonstrated to the full the glaring falsehood of the argument used by the old-time opponents to women's right

to practise medicine—that they were inherently unsuited for the work. The medical profession and the community are greatly the poorer by the death of Elizabeth Mary Sweet.

#### SAMUEL GRENVILLE SKEWES.

Samuel Grenville Skewes, whose death we recorded in *The Medical Journal of Australia* of February 15, 1919, was the son of Mr. Thomas Skewes, headmaster of a Victorian State School. He received his early education at the State School at Warrenheip, and gaining an entrance scholarship passed on to the Grenville College, Ballarat. He matriculated about the year 1890 and entered the Melbourne University to study medicine. In 1900 he passed the examination for the degree of bachelor of medicine and in the following year he took the surgical degree. After graduation he was appointed Medical Superintendent and Resident Surgeon at the Ararat Hospital. He retained this position till 1906. During the last year of his office he combined private practice with his hospital duties. On leaving the hospital he continued his private practice in the town of Ararat. He was greatly esteemed, both for his ability as a practitioner and for his kindness to his patients. In 1911 he left Ararat to take up a position in the Government Hospital at Wood's Point. He held this position for four years. In 1905 he entered into a verbal arrangement with Dr. L. S. Kidd to look after the latter's practice at Bright while he was on active service. Dr. Kidd was with the Australian Imperial Force in France for two years, and during this time Samuel Grenville Skewes attended to the patients with the same assiduity and consideration as he would have shown had the practice been his own. On Dr. Kidd's return he found everything in excellent order. There were no incidents to explain away, there were no misunderstandings, there was no unpleasantness. Dr. Kidd recognized that he had entrusted his affairs to an honourable gentleman. The same frank and pleasant relations attended the next operation, namely, that of the sale of the practice to Samuel Grenville Skewes. As in Ararat, so in Bright, he commanded the respect and affection of his patients, and soon earned the reputation of being a reliable general practitioner and a good surgeon. He took a keen interest in the welfare of his town and was the prime mover in numerous reforms.

Quite recently he was in Melbourne for the purpose of seeking advice in regard to his health, and, on returning to Bright, was found to be in a febrile condition. The affection was diagnosed as pneumonia, to which he succumbed on February 9, 1919.

### Correspondence.

#### IMMUNITY AND RESISTANCE.

Sir,—Professor Chapman has invited me to reply in *The Medical Journal of Australia* to his statements in that journal; and, though I regret the necessity, I recognize the obligation.

It is, however, impossible for me to reply to all the points on which, in my judgement, he has misread the facts of immunity and of bacteriology. But a single point on immunity will serve to illustrate a fundamental fallacy which, started by Dr. Chapman, has led the *Journal* into a policy of obstruction to an important recommendation of the Consultative Council.

I have nothing but admiration for the high scientific attainments of my colleague, and nothing is farther from my mind than to impute to him other than the best intentions. It could only add to his reputation that he should recognize the mistakes he has made—that he should try to undo their consequences—and that he should represent in the *Journal* a more progressive and enlightened medical opinion in regard to this epidemic.

I select for examination the following argument, which I give in his own words:—

Many have urged me not to oppose inoculation with these vaccines (the Federal and State vaccines recommended in the epidemic) as the injections can do no harm. May I point out that I have invariably found that an animal previously injected with some other

protein, toxin or organism does not give such a considerable formation of antibodies as an animal in good health not infected with any other microbe? . . . It would thus appear that inoculation may lessen the resistance of the patient to an attack of the disease, if the organisms used in the vaccines are not those infecting the patient.

The experimental fact on which the argument is based is one of the universally accepted facts of experimental immunity. The conclusion is a perfect *non sequitur*.

The only conclusion that Dr. Chapman was entitled to draw from his experimental data was this: "It would thus appear that inoculation may lessen the capacity of the patient to form specific antibodies, if the organisms used in the vaccines are not those infecting the patient."

Within the short space of his concluding sentence Dr. Chapman has packed no less than three misinterpretations of fact concerning the immunity to infection.

(i.) He has assumed that the formation of antibody is equivalent to resistance to infection, whereas these two immunity reactions are not equivalent.

(ii.) He has inferred that the "unclean" animal yielded a lesser production of antibody than the "clean" animal, because it was less resistant, whereas the first injection, or infection, has rendered it more resistant to the second.

(iii.) He has overlooked the fact that, in the circumstances of his experiment, the diminished production of antibody is an "indication" of increased resistance to the antigen.

The fundamental fallacy that vitiates the whole argument, and underlies many other statements in the *Journal*, is the assumption that "the formation of antibody" is equivalent to "resistance to infection."

In those infections like diphtheria and tetanus, where the bacteria operate mainly by their toxins (exotoxins), resistance must be concentrated not against the bacteria but against their toxic products. In those circumstances, the known antibodies (antitoxins) play an all-important part. But this antitoxic immunity is not included in the argument.

The parts are reversed in most other infections, where resistance must be directed against the living bacteria until antimicrobial immunity is established. With the exception of bactericidal substances, all other known antibodies appear to play a subsidiary and often negligible part in defending the animal body against microbial invasion. These antibodies are frequent and doubtless important by-products in the development of resistance without being essential to it. Resistance to infection does not necessarily depend upon the presence of any known antibody.

Many facts could be cited in proof. I quote two of those given by Browning:—

There is little doubt that a degree of acquired immunity to typhoid fever persists for a long period after an attack or after prophylactic inoculation, and is still effective at a time when antibodies have disappeared from the blood; similarly, it has been shown that in animals immunized with pneumococci there may be a high degree of active immunity, with practically no antibodies in the serum. Therefore, the antibody content of the blood does not necessarily gauge the immunity.

All arguments based on the assumption that "resistance to infection" necessarily depend upon "the formation of antibody" must therefore collapse. All statements to the effect that we need not try to create immunity to infection until we know what antibodies will be produced by our vaccines must also collapse.

If you ask me "on what, then, does resistance to infection depend if it does not depend upon antibody?" I have to reply that I do not know—and that neither does anyone else. The best explanation that I can offer is that, in some way quite unknown, the tissues of the living animal body are capable of being educated or trained to resist and to overcome invasion by living virulent bacteria, sometimes through inoculation of vaccines and sometimes through attacks of disease. Nevertheless, resistance to infection is a very real thing, which can be tested only in one way—by exposure to infection.

The experimental fact with which we started may be expressed in another way. Of two animals, one received a dose of immunizing substance (or vaccine) and the other does not. Some time later both the animals receive an immunizing dose of a different substance (or a different vaccine). It is then found that the immunity reaction, as tested

by the formation of antibody, is greater in the "immunologically clean" animal than in the animal previously inoculated.

Why, then, does the animal previously inoculated give a lesser immunity reaction than the animal not previously inoculated? The reason is that the first injection has made the animal more resistant (less responsive) to the stimulus of the second injection; not, as Dr. Chapman implies, that the first injection has made it less resistant.

Applying this fact to the argument under examination, we recognize that, even if the organisms used in the "epidemic" vaccines are not those infecting the patient, the only effect they can have on the resistance of the patient to an attack of the disease is to increase that resistance—not, as Dr. Chapman alleges, to lessen it.

If Dr. Chapman were right, then the use of a vaccine prepared with a given microbe would render the unfortunate patient less resistant to infection by all other microbes. That disastrous result is not borne out by experience.

In the present state of our knowledge—and of our ignorance—the most important rôle of the antibodies that are developed in the course of an immunity to infection is to act as "indicators" by which the progress of the immunization may be watched. But, since they are only side-issues of the main process, their significance as indicators must be interpreted with judgement and reserve.

Most often the two developments (resistance and antibody) advance together in the course of an immunization. But there are certain stages, or phases, of immunity where a diminished output of antibody proves the presence of an increased resistance to the antigen. The experiment given by Dr. Chapman is a case in point.

It is perhaps easier to appreciate this reversal of the usual relation between antibody and resistance by another illustration, which was brought under my notice by the work of Captain Keith Inglis on typhoid vaccines and agglutinins.

A man receives a dose of typhoid vaccine and the antibodies (agglutinins) in his serum show a marked increase. After ten weeks the agglutinin content of his blood falls to a constant level. If at this stage the man receives a second dose of typhoid vaccine, equal to the first dose, the rise of agglutinin will be much less than the original rise.

We cannot argue that this fact indicates a lessened resistance to typhoid, but only that it indicates a lessened response to the stimulus of the vaccine. In these circumstances we must infer that the diminished output of antibody following the later dose of vaccine "indicates" the persistence of some increased resistance.

Another possible fallacy and source of error is revealed by these considerations. It cannot be inferred that, because a given antibody is strictly limited and specific in its reactions, therefore, the effective range of the corresponding resistance is equally limited and specific. We know that an antibody prepared by immunization with a given bacterial strain may not give an appreciable interaction with other strains of the same bacteria. It does not follow that the resistance will not be effective against these other strains. The maximum resistance will be offered to the strain used in the immunization, but a very considerable "overflow" may be directed against all the other strains of the same bacteria, and possibly against other bacteria.

The experimental fact described by Dr. Chapman is evidence of the very extensive overflow of immunity (resistance) that may be caused by inoculation with unrelated substances or vaccines. The overflowing immunity is all the stronger when the vaccines are biologically related. But this biological relationship appears to influence more rigidly the formation of antibody than it does the development of resistance. The overflow reactions of antibody may be remarkably limited, whereas the overflow of resistance may be remarkably extensive.

Yours, etc.,

D. A. WELSH.

Laboratories of Pathology,  
University of Sydney.  
(Undated.)

Sir,—Your correspondent, Professor D. A. Welsh, has now placed before your readers the reasons which impelled him to attack me in the *Sun* for writing a letter<sup>1</sup> to *The Medical*

<sup>1</sup> Dated December 14, 1918.

*Journal of Australia* recommending a cautious attitude in regard to the indiscriminate use of injections of dead microbes, derived from most varied sources, as a prophylactic measure against pneumonic influenza. That my opinion was formed on similar knowledge possessed by other competent persons and by similar processes of reasoning employed by mature minds is shown by the memorandum of the Council of the Royal College of Physicians, which reached Australia since my letter was written. This memorandum points out that the value of inoculation in influenza is not known, and it urges persons not to be inoculated without the sanction of their medical attendant.

Professor Welsh writes that he does not know on what conditions resistance to infection depends, though he states that it is not the result of the formation of antibody. He adds that no one else has any knowledge of the changes in the body by which this resistance is brought about. He is, however, satisfied that resistance to infection may be produced by inoculation with vaccines and by attacks of disease. The only explanation that he can offer of this immunity is a circumlocutory restatement of the fact that susceptible organisms can be rendered less liable to attacks of microbic disease. He says: "In some way quite unknown, the tissues of the living animal body are capable of being educated or trained to resist and to overcome invasion by living virulent bacteria." Professor Welsh ignores the investigations and researches of the last twenty-five years which have shed so much light on the problems of immunity. To the immortal Pasteur mankind is indebted for the demonstration that bacteria induce changes in their surroundings as a consequence of the chemical reactions that they initiate. As long ago as 1892 A. A. Kanthack pronounced the general law "that the chief lesions in any infective process, due to a vegetable organism, are due not to the mechanical presence of the micro-organisms, but to the action of the metabolic products of these organisms." Bordet could write in 1895 as follows: "Animals which have been well immunized against a given infection, either by repeated injections of bacterial products or of living cultures, may be distinguished from normal animals, not only by the fact that they henceforth resist this infection, but also, in numerous instances, by the fact that their body fluids, especially the blood serum, possess properties which are not observed in the non-vaccinated animal. The serum of vaccinated animals is often preventive, and, at times, bactericidal or antitoxic. It is not sufficient for theories of immunity to explain how an animal what has been vaccinated is fitted to overcome an infection. They must explain how these new properties, the study of which has so greatly interested bacteriologists, have been formed in the body fluids. The study of the serum of immunized animals forms a new chapter in the history of the struggle between the animal and infective agents. . . . The substances which are present in the serum of vaccinated animals are unknown to us." The labours of Bordet, Ehrlich and hosts of others have taught us much about these antibodies. Our knowledge is still far from complete, but the passage of each year adds new members to the long list of known antibodies.

The fact that the degree of immunity cannot be always measured numerically by an estimation of any single known antibody, e.g., an agglutinin, is due to our present disability to determine the total formation of antibodies. While I deny that the power of resistance to an attack of disease necessarily runs parallel to the quantity of any known antibody, I assert with confidence that this immunity to an attack of disease is dependent upon the chemical substances which appear within the body as a result of immunization.

This brief summary of the nature of the process of immunity would be incomplete without reference to the part which is taken by phagocytosis or the ingestion and digestion of germs by the cells of the body in preventing infection. The process is observed freely in the normal, as well as in the immune animal. At one time it was thought that the humoral and phagocytic explanations of immunity were mutually exclusive, but Metchnikoff showed at the beginning of the century how humoral and phagocytic processes were complementary in certain immunities.

I have said enough to show that immunity is bound up with the formation of antibodies. I would urge those pathologists who lay so much stress on morbid anatomy, to study the chemical changes which form part of diseases.

By doing so they will acquire some knowledge of the diseases of the living in addition to an acquaintance with the organic lesions of the dead.

I presume that Professor Welsh does not intend to discuss "inoculation" with me. The nature of the inoculated material is surely of paramount importance. The immunity, either against a living germ or some organic substance, is specific. The high degree of this specificity compelled Ehrlich to postulate millions of different antibodies. The specificity of immunity constituted at the end of the nineteenth century the chief argument against a simple phagocytic explanation. The lapse of years has served to emphasize more strongly the specific character of any immunity and to limit the range of "overflow" immunity. In respect to inoculation with dead microbes I might recall an example about which there is no dispute. When our troops were first sent from these shores to Egypt they were inoculated with a suspension of dead typhoid bacilli. These inoculations warded off attacks of enteric fever, but did not prevent closely analogous disease caused by paratyphoid bacilli. It was found necessary to add paratyphoid bacilli A and B to the vaccines to obtain immunity to these intestinal affections. These inoculations led to no resistance against bacillary dysentery, another intestinal ulceration.

Unfortunately, we have not yet succeeded in determining what microbes are associated with epidemics of influenza. Even if we accept the influenza bacillus, the pneumococcus and *Streptococcus hemolyticus* as occasioning the pandemic and ignore any unknown germ, we are not yet in a position to separate speedily or readily different races of these microbes, though we are aware that these different strains occur in this community. Does anyone contend that all the numerous vaccines used in New South Wales and derived from manifold sources contain the races present in the diseased who arrived from New Zealand or South Africa?

May I remind Professor Welsh that there exists no evidence that immunity can be produced by two or three inoculations with the bacillus of influenza. After repeated inoculations with dead or living bacilli for two months, no one has observed any resistance to the effects of the injection of a lethal number of these bacilli. As no antibodies can be detected, infection with living influenza germs has been the only method of testing for this immunity. In respect to inoculation with pneumococci, it was the discovery of antibodies in the serum of vaccinated animals that led to renewed attention. During an outbreak of influenza in South Africa Sir Almroth Wright tried to check the pneumonia among the natives working in the Rand mines by inoculating them with pneumococci isolated from the patients. He could not observe any protection among the vaccinated natives. With the isolation of different races of pneumococci and the use of specific strains for inoculation against infection with each race, claims for success are put forward. Lister asserts that his vaccine, containing eight strains, greatly lessens the risk of developing pneumonia, but does not lower the case-mortality. Pratt Johnston, working under similar conditions in South Africa, with a pneumococcal vaccine containing more strains, denies vigorously that pneumococcal vaccines protect in the slightest against the onset of pneumonia, but assures us that their effect on the course of the disease is little short of miraculous. A thorough search of medical literature reveals so few records of facts about pneumococcal vaccination that I recognize that most of the statements about their effects made to the lay press are the products of the imagination. The amount of evidence is so small and the evidence so contradictory in character that it seems to me rash to advise the public to be inoculated with vaccines containing pneumococci of unknown races.

In conclusion, may I refer to the remarks of Professor Welsh about the harmlessness of inoculation. He accuses me of drawing an erroneous inference by using the term resistance to an attack of the disease at the end of a statement referring to the formation of antibodies. I regard the resistance to an attack of disease as being associated with the formation of antibodies, though I agree with Professor Welsh that the estimation of any single antibody may, on some occasions, lead to an erroneous estimate of the degree of immunity. In investigations dealing with the production of immunity by inoculation, an immunity frequently tested by introducing living organisms, it is often the practice to



measure some antibody in the course of the injections, since the experiment is brought to an abrupt end by introducing the living microbes. The results of these comparative investigations lead me, in common with many others, to affirm that contamination with other microbes lessens the immunity demonstrated by infecting the animal with living microbes. In the second place, Professor Welsh considers that a previous injection of some other antigen heightens the resistance. Frankly, I disagree. I consider it harmful to give a nurse who is being inoculated with typhoid vaccine a preliminary injection of, say, polyvalent influenzal vaccine. I do not agree with Professor Welsh that the nurse will be more immune to enteric fever on account of the preliminary injection of influenzal vaccine. My experience tells me that it is a mistake to inoculate any nurse with typhoid vaccine when she is ill from some other infective ailment, as this nurse will show a lessened resistance to enteric fever as compared with a healthy nurse inoculated at the same time. I must, however, confess that it never entered my head to try a preliminary injection of some other vaccine to heighten the effects of anti-typhoid inoculations. After careful attention to the explanations by Professor Welsh of the facts about which we do not disagree, I see no reason to depart from my original contention that inoculation with some non-specific vaccine may lessen the resistance of a patient to an attack of disease caused by some microbe.

Let me finally remind Professor Welsh that it was the utility of these inoculations with the Federal and State vaccines, rather than the harm that they may produce if the organisms that they contain are not concerned with the production of pneumonic influenza, that I discussed in my original letter. On this principal topic Professor Welsh has so far remained silent.

Yours, etc.,

HENRY G. CHAPMAN.

University of Sydney,  
February 22, 1919.

#### THE INFLUENZA EPIDEMIC.

Sir,—In your issue of February 1 it is stated that "on January 26, 1919, the Chief Health Officer of Victoria consulted with the Advisory Committee, and arrived at the conclusion that the local epidemic was not of the same disease that had ravaged New Zealand. It was therefore agreed that there was no reason why Victoria should be declared an infected State. On January 28 the Advisory Committee decided that pneumonic influenza existed in Melbourne."

As I am in a position to know that in at least two other States charges of criminal culpability are being freely brought against the Victorian health authorities, I think the profession is entitled to ask:—

- (1) Who are the Victorian Advisory Committee?
- (2) What evidence they had that the Victorian epidemic was not pneumonic influenza?
- (3) What evidence caused them so suddenly to change their opinion?

Yours, etc.,

"TRAVELLING DOCTOR."

February, 1919.

#### MASKS AS PREVENTIVE MEASURES AGAINST INFLUENZA.

Sir,—Re Dr. A. R. Macleod's protest against the wearing of masks. Would it not seem reasonable that the main protection derived from the enforced wearing of masks is in preventing persons in the incubation period of the disease from scattering impartially the infectious secretions of the mouth and nose.

Yours, etc.,

H. I. SADLER.

Orange, February 18, 1919.

#### THE SURGERY OF SPASTIC PARALYSIS.

Sir,—Dr. Teece's welcome criticism of my paper suffers from evident lack of information regarding Stoffel's operation. In the first place, the analogy which Dr. Teece sees between the operation I described and Nutt's experiment cannot be described as a happy one. The intermuscular

fascia is not removed in Stoffel's operation, nor is there any extra inducement for nerve fibres in a trunk to change their position and destination in a parent trunk, because the nerve supply of a particular muscle has been partially divided. The cause of the recurrence of spasticity and deformity I have already dealt with, but it might be interesting to mention that it was the recurrence of deformity after the procedures which Dr. Teece advocates that led most of those who practise Stoffel's operation to try something which would give more consistent and more permanent results. For example, in the case of the boy with spastic paraplegia whom I showed at the meeting, tendon lengthening had previously been done without any improvement in the paresis and with a return of contracture. The other objections have already been dealt with in my paper, excepting Dr. Teece's charge of lack of scientific foundation for the operation. This is purely a matter of opinion, and it is pleasing to note that in Dr. Gordon Craig's mature judgement it is a "refined anatomical attack based on rational science."

Yours, etc.,

N. D. ROYLE.

175 Macquarie Street, Sydney,  
February 24, 1919.

#### THE LODGE DISPUTE IN VICTORIA.

Sir,—I notice by the daily press that the British Medical Association's offer to the lodges is still open. Now, I quite agree with Dr. Huckell that the profession went into the fight for a minimum rate, and we should not give way on any points. We stated that the institutes must go, but lately we are willing to allow the lodges to keep the existing ones, which, as Dr. Huckell says, is unfair to the men who have had institutes opened against them. Why should we take the Wasley award of 2s. 6d. for a night visit? I should like to see Judge Wasley travel two miles at night at his own expense and be paid 2s. 6d., or even have to post accounts to collect it.

Dr. P. G. Clarke asks what does the country practitioner obtain from the protraction of the struggle. My answer to this would be peace and freedom from humbug.

I am informed by one lodge here that, during the last four months, a profit has been made on the present arrangement. Personally, I do not begrudge the lodge a legitimate profit. I am saved the annoyance of being at the beck and call of its members and having the lodge make a profit by exploiting me.

The lodges have refused the offer of the British Medical Association, then let us continue as at present until we obtain what we originally asked for.

Yours, etc.,

M. D. NESBITT.

Lancefield, February 21, 1919.

#### Proceedings of the Australian Medical Boards.

##### QUEENSLAND.

The undermentioned has been registered under the provisions of *The Medical Act of 1867*, as a duly qualified medical practitioner:—

Morrissey, Gordon Carey, M.B., Ch.B. (Univ. Melb., 1918),  
Brisbane Hospital, Brisbane.

The following have been elected as members of the New South Wales Branch of the British Medical Association:—

T. A. Kidston, Esq., M.B., Ch.M., 1918 (Univ. Sydney), 3  
Erith Street, Mosman.

Wilfred H. Cook, Esq., M.B., Ch.M., 1918 (Univ. Sydney),  
Sydney Hospital.

S. R. Mitchell, Esq., M.B., Ch.M., 1918 (Univ. Sydney),  
Lewisham Hospital, Lewisham.

J. G. Hunter, Esq., M.B., 1915 (Univ. Sydney), 231 Edge-  
cliff Road, Woollahra.

E. L. Milgrove, Esq., M.B., Ch.M., 1918 (Univ. Sydney),  
Royal Alexandra Hospital for Children, Camperdown.

W. H. N. Randall, Esq., M.B., Ch.M., 1918 (Univ. Sydney),  
Royal North Shore Hospital, St. Leonards.

### Books Received.

INFECTION AND RESISTANCE: AN EXPOSITION OF THE BIOLOGICAL PHENOMENA UNDERLYING THE OCCURRENCE OF INFECTION AND THE RECOVERY OF THE ANIMAL BODY FROM INFECTIOUS DISEASE, by Hans Zinsser, M.D., with a Chapter on Colloids and Colloidal Reactions by Professor, Stewart W. Young; Second Edition; Revised; 1918. New York: The Macmillan Company; Sydney: Richard Thomson; Royal 8vo., pp. 585, illustrated. Price, 24s.

### Medical Appointments.

Dr. R. G. St. John Naylor (B.M.A.) has been appointed Superintendent of the Hospital for the Insane, Ararat, Victoria, during the absence on leave of Dr. A. J. W. Philpott (B.M.A.).

The appointment of Dr. James Macarthur (B.M.A.), of Pambula, New South Wales, has been appointed Government Medical Officer for Eden and district.

During the absence on leave of Dr. A. Andrews, Dr. G. A. Paton (B.M.A.) has been appointed Visiting Surgeon and Medical Officer in Charge of the Lock Hospital, Albury Gaol, Albury, New South Wales.

The resignation by Dr. Ralph Athelstane Noble (B.M.A.) of his position as Junior Assistant Medical Officer to the Lunacy Department of New South Wales has been accepted.

### Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xvii.

Wellington Hospital and Charitable Aid Board, New Zealand: Medical Superintendent.

### Medical Appointments.

#### IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
<b>VICTORIA.</b> (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other Contract Practice. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
<b>QUEENSLAND.</b> (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Cloncurry Hospital.
<b>TASMANIA.</b> (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.

Branch.	APPOINTMENTS.
<b>SOUTH AUSTRALIA.</b> (Hon. Sec., 3 North Terrace, Adelaide.)	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
<b>WESTERN AUSTRALIA.</b> (Hon. Sec., Health Department, Perth.)	All Contract Practice Appointments in Western Australia.
<b>NEW SOUTH WALES.</b> (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmalm United Friendly Societies' Dispensary. Canterbury United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Friendly Society Lodges at Lithgow. Friendly Society Lodges at Parramatta, Auburn and Lidcombe. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. New South Wales Ambulance and Transport Brigade. Newcastle Collieries—Killingworth, Seaham Nos. 1 and 2, West Wallsend. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phoenix Mutual Provident Society.
<b>NEW ZEALAND: WELLINGTON DIVISION.</b> (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

### Diary for the Month.

- Mar. 4.—Tas. Branch, B.M.A., Council.  
Mar. 5.—Vic Branch, B.M.A.  
Mar. 7.—Q. Branch, B.M.A.  
Mar. 11.—N.S.W. Branch, B.M.A., Ethics Committee.  
Mar. 13.—Vic. Branch, B.M.A., Council.  
Mar. 13.—N.S.W. Branch, B.M.A., last day for nomination of candidates for election to the Council.  
Mar. 14.—S.A. Branch, B.M.A., Council.  
Mar. 14.—Q. Branch, B.M.A., Council.  
Mar. 18.—Tas. Branch, B.M.A., Branch and Council.  
Mar. 18.—N.S.W. Branch, B.M.A., Executive and Finance Committee.  
Mar. 19.—West. Aust. Branch, B.M.A.  
Mar. 19.—Western Suburbs Medical Association (Sydney).  
Mar. 25.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.  
Mar. 26.—Vic. Branch, B.M.A., Council.

### EDITORIAL NOTICES.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney, New South Wales.

The Honorary Librarian of the New South Wales Branch of the British Medical Association notes that the following numbers of *Surgery, Gynecology and Obstetrics* are missing from the library files:—

1915: August, October and December.  
1916: February, April and November.

1917: March.

Members who have borrowed these journals, are requested to return them as soon as possible, to enable the completed volumes to be bound.